SUSE® Linux Enterprise Server on IBM LinuxONE & z Systems
The highly scalable Hub for Enterprise Mobile workloads

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15 Years – a happy pair
SUSE Linux Enterprise and IBM z Systems

- From the beginning sympathy on all levels
- Reliability in reality
- High Availability
- Capacity growth and Flexibility
15 Years – solutions with SUSE Linux Enterprise on IBM z Systems
New marketplace dynamics drive hyper growth opportunity for **IBM z Systems**

**Traditional**
1964–2014
- Batch
- General Ledger
- Transaction Systems
- Client Databases
- Accounts payable / receivable
- Inventory, CRM, ERP

**Linux & Java**
1999–2014
- Server Consolidation
- Oracle Consolidation
- Early Private Clouds
- Email
- Java®, Web & eCommerce

**CAMSS²**
2015–2020
- On/Off Premise, Hybrid Cloud
- Big Data & Analytics
- Enterprise Mobile Apps
- Security solutions
- Open Source LoZ ecosystem enhancement

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1. MIPS: Millions of Instructions per Second or the metric z uses to measure client workload
2. CAMSS: Cloud, Analytics, Mobile, Social, Security

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**15 years of Enterprise Linux® on IBM z Systems™ (LoZ)**
While “Linux is Linux“, z Systems server and virtualization technologies provide an enhanced Linux solution

**Having an enterprise grade Linux solution brings:**

- IT simplicity to run hundreds of workloads on one server
- Workload integration inside a single server
- Flexible server provisioning and growth inside the server
- High productivity through efficient life cycle management
- High utilization of shared resources
- Highest levels of security and quality of service – including business continuity

Linux on z Systems provides security, availability, and scalability to deploy & consolidate all kinds of workloads

**Linux on z Systems - means an enterprise grade Linux solution - SUSE Linux Enterprise Server (SLES) a great partner**
Mobile workload with SUSE Linux Enterprise Server

The mainframe…
• Home to business critical applications and data

• How do we bridge the gap?
Business Models are changing...

...a new computing era is here
Mobile adoption in the enterprise market is still immature

Most organizations are still experimenting with their technology infrastructure.

Many organizations have not yet started and most have few apps.

Source: Gartner (October 2014)
IBM positioning to solve the Mobilizing challenges

MobileFirst Platform – An Enterprise Blueprint
IBM MobileFirst Platform on \textit{z Systems}

\textbf{Infrastructure matters:} Scaling to meet mobile, Availability and Reliability

\textbf{Integrating Mobile:} What's old gets new, enhanced interface

\textbf{Security:} Mobile is different
End-to-end security for every transaction

\textbf{Public Exposure:} Introducing your new services and a new business model
IBM z Systems - Systems of Engagement with SLES bridges to Systems of Record

<table>
<thead>
<tr>
<th>Systems of Engagement</th>
<th>Systems of Record</th>
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<tbody>
<tr>
<td>Systems of Engagement are cloud-based,</td>
<td>Systems of Record are well integrated, trusted</td>
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<tr>
<td>decentralized, support rapid app</td>
<td>repositories</td>
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<td>development</td>
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**Linux on z**

**Existing Web Apps**

**Mobile Apps**

**z/OS, z/VSE, zTPF**

**Finance**

**Corporate Data Warehouse**

**Accounting**

**Order Fulfillment**
Enterprise Modernization: Deliver at the speed of mobile

Mobile Devices
- iOS
- Android
- Blackberry
- Windows Phone

Systems of Engagement
- App updates
- Security
- Back-end connectivity
- Mobile Analytics

Mobile Enterprise Application Platform (MEAP)

Systems of Record
- SOAP
- XML
- JSON
- MQ
- HTTP
- CICS
- IMS
- WebSphere AS
- DB2

Analytics
IBM MobileFirst Platform Foundation overview

**IBM MobileFirst Studio**
The most complete, extensible environment with maximum code reuse and per-device optimization

**IBM MobileFirst Server**
Unified notifications, runtime skins, version management, security, integration and delivery

**IBM MobileFirst Device Runtime Components**
Extensive libraries and client APIs that expose and interface with native device functionality

**IBM MobileFirst Application Center**
The MobileFirst Application Center can function as an enterprise application storage to deploy mobile applications across mobile platforms.

**IBM MobileFirst Console**
A web-based console for real-time analytics and control of your mobile apps and infrastructure
IBM MobileFirst Foundation
– 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
IBM MobileFirst Platform - Advantages

• Mobile App development
  – Cross Mobile Platform development tools
  – Security assurance during development

• Mobile App Control Point
  – Cross Mobile Platform - Android, iOS, Blackberry, Windows Phone
    – Device Management
    – App Management
    – Mobile Apps Analytics

• Advanced Integration Capabilities
  – Integration flexibility with Adapter technologies
    – Universal, transactional, secure adapters, integrate existing App code

• End-to-End Security
  – Security focus an Device, Content, Application and Transaction security
Mobile Reference Architecture
Overview Diagram for z Systems with SUSE Linux Enterprise Server

MobileFirst Studio and Rational Developer for z Systems

Mobile Device

Security Layer 1

Caching Service 1 (Optional)

Mobile First App Code

MobileFirst Server

MobileFirst Server and Console

MobileFirst Adapters

Caching Service 2 (Optional)

Security Layer 2

z/OS

CICS, IMS

DB2

TPF

z/VSE

IBM Information Bus (IIB)

MobileFirst App Code

Linux on z Systems

WebSphere Application Server on Linux on z

MobileFirst Server

MobileFirst Server and Console

MobileFirst Adapters

DB

z/VM
Mobile Environment on z Systems with SUSE Linux Enterprise Server connecting to Core Systems

- **Server side software components and adapters for channeling z Systems to mobile devices** with IBM MobileFirst Server
- **Mobile application support** with WebSphere Application Server on z Systems
- **Mobile protocol connectivity with core z Systems applications** including CICS, IMS, TPF, MQ, WMB and DB2
IBM MobileFirst Server on SUSE Linux Enterprise Server

Device

- App-logic

Worklight

- Security and Authentication
- Back-end Data Integration

MobileFirst Server in WAS

- Server-side Java App Code -- WAS
- MobileFirst Console
- Push Notifications
- Analytics

Application Center

- Enterprise App Store
- JSON Translation
- Authentication

Adapter Library

- SAP
- SQL
- WMB
- SOAP
- HTTP/REST
- Java

Linux on z

MobileFirst Video: http://www.youtube.com/watch?feature=player_embedded&v=zHnFw70XXXo
IBM z Systems Connectivity Options with IBM MobileFirst

MobileFirst Server

Adapters
- HTTP
- HTTP
- MQ
- MQ
- HTTP

Web Services

HATS

z Systems

CICS
- HTTP

HTTP

3270

TN3270

SNA

3270

MQ

HTTP

HTTP

MQ

MQTT

REST

Messaging

JSON

SOAP
Capabilities required to integrate rapidly

Creating great APIs: How to attract developers with easy to find and use APIs?

Composing rich APIs: How to combine APIs and services to deliver compelling value?

Protecting Access: How to secure access to APIs without disrupting the developer experience?

Managing APIs: How to manage all aspects of how APIs are used, delivered and enhanced?

Using SOA services: How to accelerate delivery of new services by extending existing ones?

Systems of Interaction:

- Mobile
- Internet of Things
- Social
- Partners
- Web
- Public Cloud
- Back-office Processes
- Private Cloud
- Analytics
- Databases
- CRM

Systems of Engagement

Systems of Record
1) Integrate and securely expose APIs & business services to internal and external consumers

IBM API Management v4

- Easily assemble business APIs into a single catalog & publish to custom social portals
- Manage APIs using IBM API Management in Bluemix & share APIs with Bluemix developers
- Accelerate API creation, deployment & invocation with Swagger 2.0 support
- Extract API usage & analytics data via API
- Leverage API Management Service delivered in Softlayer with built-in failover, redundancy & dynamic scaling
- Move APIs & Plans from public cloud to private/on-premise for complete flexibility
2) Integrate through IBM Integration Bus

- IBM’s strategic enterprise integration technology
  - Single engineered product for .NET, Java and fully heterogeneous integration scenarios
  - DataPower continues to evolve for integration gateway use-cases

- IBM Integration Bus is follow-on product of WebSphere Message Broker
  - Technology progression over 15 years, installed at 2500+ customers worldwide across all industries
  - Fully supported worldwide by IBM global support network, standard 5 + 3 years support policy
  - Version to version migration is key design consideration
  - Global skills availability - SME’s available globally via IBM and partners
  - Close interaction with growing and loyal customer base: beta and lab advocacy programs
  - Also incorporates WebSphere ESB use-cases
Putting it all together on **SLES**

- Run IBM MobileFirst and IBM Integration Bus on **SLES**
- Mobile enable any enterprise service in 2 clicks!
- Build robust solutions with integrated caching & security
- Push data to mobile users from enterprise applications
- Create end-to-end mobile solutions for Microsoft .NET
- Content based filtering of publications from mobile devices
- Publishing events from back-ends to mobile devices
3) Integrate via IBM WebSphere Liberty & z/OS Connect

Secure and Consistent Enterprise Connectivity for Mobile

Ships with WAS, CICS, and IMS. Runs in z/OS only.

- **Built for z/OS** – Builds on z/OS qualities of service - security, auditing, chargeback.
- **Unifies connectors** – A common solution for mobile, cloud, and web
- **Simplified integration** – Hide complexity of connecting to z/OS using REST
- **API Management** – Mobile developers can discover the transactions you choose.
Context Within Overall Mobile Architecture

*z/OS Connect is a piece of the overall Mobile architecture*

Users of z/OS Connect would access through normal corporate firewall infrastructure.

IBM MobileFirst Platform to provide application management, security and operational governance for mobile applications.

z/OS Connect would be behind the secure firewall, and on LPARs along with backend systems.
Key Mobile Deployment scenarios with z Systems and SUSE Linux Enterprise Server

- on premise – with the System of engagement on z Systems
- off premise – with the System of engagement offsite – i.e. in IBM Softlayer cloud
End-to-end security solutions for the mobile enterprise

Device Security

Content Security

Application Security

Transaction Security

powered by...

IBM MobileFirst Platform

IBM Security AppScan

IBM Security Access Manager

Trusteer

IBM Security zSecure

IBM MobileFirst Protect

Arxan Application Protection for IBM Solutions

IBM RACF

IBM Distributed Identity Data

IBM InfoSphere Guardium

IBM DataPower

z/OS Connect

Security Intelligence

IBM QRadar Security Intelligence Platform
Secure the Users & Devices and every transaction from Mobile on **SUSE Linux Enterprise** to the Enterprise transactions & data.
Develop once for Multi-platform with 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
IBM MobileFirst Studio – Free Development Tool Set

[Diagram with the following sections:
1. **MobileFirst Studio**
   - Html5, Hybrid, and Native Coding
   - Optimization Framework
   - Integrated Device SDKs
   - 3rd Party Library Integration
   - WYSIWYG Editor and Simulator
   - Functional Testing

2. **MobileFirst Application Center**
   - Development Team Provisioning
   - Enterprise App Provisioning and Governance
   - App Feedback Management
   - Public App Stores

3. **Device Runtime**
   - Cross-Platform Compatibility Layer
   - Server Integration Framework
   - Encrypted and Syncable Storage
   - Runtime Skins

[Link to IBM MobileFirst Studio documentation]

IBM Rational Developer for z Systems with MobileFirst Studio

Full set of z Systems and Mobile Development capabilities (z/VSE Plug-In required)

Integration with Team Concert for Lifecycle and Source Management

Access to typical IBM z Systems sub-system functionality in, CICS, IMS, DB2, WAS

Robust Mobile Development in conjunction with MobileFirst

COBOL, ASM, JCL, C, Java, GUI Development
IBM BlueMix Development environment in Softlayer

Delivering a Composable Services development environment including Mobile
- Softlayer – the off premise distributed cloud platform with secured access to z Systems resources
- BlueMix – development environment for new applications using composable services

API Catalog
A catalog of developer friendly APIs (IBM & third party) with mobile SDKs, that can be composed into new and existing mobile apps. Configure and manage through the BlueMix portal.

Run Code
The developer can chose from multiple language runtimes or bring their own. Just upload your code and go.

Store Data
The developer can store data in the cloud as a service easily without needing to administer the databases.

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.
IBM Mobile Apps - Industry Ready

Activity Streams
Activity Streams provides developers with a openly extensible standard data model and JSON-based encoding format for building composable descriptions of discreet actions being carried out by various kinds of actors. This format enables applications to easily perform a variety of analytics and workflow operations that enable deep insight into how users are engaging with an app.
MORE

IBM Bluemix Mobile Services SDKs
With the set of client-side SDKs, you can target iOS, Android, Cordova, and Windows devices. With the set of server-side SDKs, you gain the edge in Node.js and Liberty server environments. Whatever space you work in, the IBM Bluemix Mobile SDK is the right tool for you.
MORE

IBM Ready App for Banking
The IBM Ready App for Banking is a mobile app that focuses on the Banking segment of the Financial Banking Industry. The app personalizes banking for small businesses, and allows business owners to perform financial activities in an intuitive way.
MORE

IBM Ready App for Healthcare
IBM Ready App for Healthcare bridges the gap between therapist and patient, providing a platform to enable patients to continue their treatment from home.
MORE

IBM Ready App for Insurance
The IBM Ready App for Insurance is focused on improving the relationship between homeowners and their insurance providers. Consumers are able to stay connected to their homes by syncing Internet of Things (IoT) sensors with select utility systems in their homes.
MORE

IBM Ready App for Retail
The IBM Ready App for Retail focuses on specialty stores and offers users a personalized customer experience. Using contextual notifications and beacons, the app guides users into a store and helps them navigate the purchasing process.
MORE

IBM Design Language Mobile Animation Components
As part of publicly releasing the IBM Design Language, IBM Design in its latest update has open sourced an animation library for mobile apps that captures the feel of machines in motion.
MORE

https://developer.ibm.com/open/projects/#project_categories_mobile
Want to start: -> IBM Mobile Test Drive

- Partner with IBM resources to work on a Mobile Test Drive of your choice:
  - Select an entry point such as building a mobile front end for an existing 3270 application, composing a Bluemix mobile app connected to a system of record, assessing the benefits of Mobile Workload Pricing, leveraging API enablement using API Management or z/OS Connect, and others

- Benefits:
  - Work with IBM mobile specialists to review existing mobile projects, priorities and requirements
  - Leverage best practices and subject matter expertise for input into your enterprise mobile infrastructure strategy and enterprise mobile roadmap
  - Learn what others are doing to accelerate time to value and differentiate their business with mobile projects by integrating high value enterprise data and transactions

- Who should be interested?
  - Clients that are looking to leverage existing z Systems data and applications via mobile channels to drive more value from mobile initiatives

- What is the commitment?
  - 1-2 days Discovery that IBM mobile experts facilitate with your business and technical team, followed by a deeper Mobile Test Drive, for up to a two weeks engagement

- How much will it cost?
  - We will provide no-cost technical expertise and access to resources during the Proof-of-Concept

Contact: Nathan Brice (nbrice@uk.ibm.com)
Is IBM MobileFirst Platform for Your Company?

3 X 3 X 3 RULE

If you are planning 3 or more Mobile Applications, On 3 or more different devices, and will be using 3 or more different integration points

Then…

IBM MobileFirst Platform is for you!!!
Client drivers for mobile solutions span all industries

**Finance & Banking**
Manage their investment portfolios and accounts from anywhere for complete bank transactions

**Construction & Manufacturing**
Manage complex projects and operations on site and streamline survey and work order processes

**Insurance**
File, process and manage claims and document damages

**Retail**
Engage shoppers in new ways and intelligently target personalized and location sensitive marketing offers

**Travel & Transportation**
Provide up to date information specific to their itineraries and location and enable customer self-service

**Cross-Industry CIO’s Office**
Empower employees with anytime, anywhere access to dashboards and critical information
Mobile is growing rapidly on z Systems with Linux

1/3 of all IBM MobileFirst business is on z Systems
Take advantage of unique IBM z Systems characteristics and SUSE Linux Enterprise Server

- 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
- High **Availability** with MobileFirst Platform and WebSphere Clusters in a highly virtualised Linux on z Systems environment
- **Co-location** of the MobileFirst Platform server application with data and transactions on z/VSE and z/OS reduces the latency of access to z Systems data.
- **Hipersockets** provides the best communication between MobileFirst Platform apps and System of Record.
- **Hardware encryption** speeds SSL applications
- **Business Resiliency** for critical mobile apps

Infrastructure matters for mobile applications. The z Systems platform’s scalability, security, and resilience can enhance critical mobile applications.
The future is here:
Mobilize your enterprise with
SUSE Linux Enterprise Server and
IBM z Systems and LinuxONE
SUSE Linux Enterprise Server exploits IBM LinuxONE Systems

The most trusted, efficient and high performance enterprise-grade Linux platform
IBM LinuxONE

Linux YOUR WAY

Linux WITHOUT LIMITS

Linux WITHOUT RISK
Enterprise mobility
Innovate and differentiate your mobile services with IBM z Systems

IBM mainframe: The reliable, available and secure mobile platform
Today there are over 10 billion mobile devices accessing information. Enterprises are challenged with integrating new mobile services with existing organizational processes, without sacrificing the client’s experience. IBM z Systems provides you with enterprise mobility solutions which can scale to handle the huge number of often unpredictable transaction rates and volumes, deliver proven mobile integration with reliability, availability, and security, and ensure that your customer data is protected.

Mobile solution kit: Build cost-effective, scalable, and secure mobile apps
Build and deploy your employee mobile applications in record time, and with end-to-end security
→ Mobile Solution Kit for IBM z Systems (505KB)

Enterprise mobility solutions
Simply and securely access z/OS data and transactions from mobile applications via a single gateway
→ WebSphere Liberty z/OS Connect (493KB)
Capture tester and live-user experience for building mobile apps
→ IBM Mobile Quality Assurance

Automate your testing of mobile apps with regression testing, scalability testing and integration technologies.
→ Get the Rational Test Workbench 8.7 trial
Build, run, test and manage HTML5, hybrid and native mobile applications
→ IBM MobileFirst Platform
http://www-03.ibm.com/systems/z/solutions/mobile.html
Questions?

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