Introduction to IBM Worklight Mobile Platform

Smarter software for a smarter planet
The Worklight Mobile Platform

The Worklight Mobile Platform is an open, complete and advanced mobile application platform for HTML5, hybrid and native apps.
Evolving Mobile Landscape

Mobile Development is more expensive than traditional Web App Development:
– Which smartphone? Which tablet? Which form factor?
  • iOS, Android, Blackberry, Windows Phone
  • All of the above..
– Skills?
  • Web or native apps? Java or Objective C? Or other?
– Maintenance?
  • Separate software stacks for each major OS
  • Separate applications for each major OS
  • How do I keep software current?
– Security?
  • Encryption? Authentication?
  • Response to stolen/lost devices?
– Management?
  • Can I see my apps? Can I disable them remotely?
– Enterprise Integration?
  • How do I build cross-channel app?
Mobile Foundation

IBM Mobile Foundation

IBM Worklight

IBM Endpoint Manager for Mobile Devices

Firewall or Security Gateway

SOA & Connectivity
- WebSphere MQ/Message broker
- Websphere Cast Iron
- WebSphere Services Registry and Repository

Enterprise Apps
- IBM Cognos
- WebSphere Operational Decision Management
- IBM Business Process Management
- Lotus Connections

Rational Collaborative Lifecycle Management

IBM QRadar
- IBM Security Access Manager for Mobile (TAMeb)
- IBM AppScan for Mobile

WebSphere eXtreme Scale / WebSphere DataPower XC10 Caching Appliance
How Worklight is Different

Open, standards-based
- Developer flexibility
- Avoid vendor lock-in

Extremely easy to learn and use
- Few days to full productivity
- No Worklight involvement

HTML5 as core development technology
- Cross-platform technology strongly promoted by all mobile vendors
- Leverage existing web development skills in IT

Focus on new devices and OS’s
- iOS, Android, BlackBerry, Windows Phone
- Phones and tablets
- Native, hybrid, and web apps

Cater to high-end enterprise needs
- B2C and B2E
- App capabilities, development process, integration, security, scalability, and management
Customers are focused on a new set of mobile “client initiatives”

### Client Initiatives

- **Build** mobile applications
- **Connect** to, and run backend systems in support of mobile
- **Manage** mobile devices and applications
- **Secure** my mobile business
- **Extend** existing business capabilities to mobile devices
- **Transform** the business by creating new opportunities

### Key Capabilities

#### Key Capabilities
- Mobile web app development
- Enterprise data, service, and application integration
- Mobile Technology Preview features

#### Key Capabilities
- Mobile Lifecycle Management
- Device analytics and control
- Secure Network Communications & Management

#### Key Capabilities
- Strategy and planning services
- Mobile-enabled solutions including analytics, commerce, and social business
- Implementation and hosting services

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**Concord Hospital**

Concord Hospital improved patch compliance 50%, reduced software license costs 25%, and has not had a single malware infection since implementation of IBM Endpoint Manager for patch management and core protection

**The Wimbledon App**

The Wimbledon App transforms the fan experience at the tournament by combining GPS location data with analytics and live-action feeds of all the tennis action
Customer Spotlight – ING Direct France

- Leading iPhone banking app in France with a unique user experience
- Flexibility: Valued HTML5, but preferred starting native
- Mobile adaptation of data integration and authentication layers
Customer Spotlight – Lotte

- Rich hybrid app with over 100 screens
- Native implementation for augmented reality and security
- Ported Android to iOS in a 3-4 weeks
Worklight Application Types

**Browser Access**

Written in HTML5 JavaScript and CSS3. Quick and cheap to develop, but less powerful than native.

**Hybrid Apps - Web**

HTML5 code and Worklight runtime libraries packaged within the app and executed in a native shell.

**Hybrid Apps - Mixed**

User augments web code with native language for unique needs and maximized user experience.

**Native Apps**

Platform-specific. Requires unique expertise, pricy and long to develop. Can deliver higher user experience.
What are Hybrid Apps?

- Can be uploaded to Apple AppStore, Google Play Store and other app stores
  - For iOS, it will have an IPA file extension
  - For Android, it will have an APK file extension
- Worklight Runtime Component
  - It’s a Common Framework
  - Performs things like:
    - Check-in with Server on Startup
    - Check for updates
    - Authentication framework
    - Push notification framework
    - Sending Statistic
    - Device API
    - etc
Worklight Overview

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

**Worklight Server**
Mobile middleware offering unified push notifications, version management, security and integration

**Worklight Runtime Components**
Extensive libraries and client APIs that expose and interface with native device functionality and the Worklight Server

**Worklight Console**
A web-based console for real-time analytics and control of your mobile apps and infrastructure
Worklight Architecture
Worklight Runtime Architecture

- Worklight Server
  - Server-side Application Code
  - JSON Translation
  - Authentication
  - Adapter Library
  - Stats Aggregation
  - Client-side App Resources
  - Direct Update
  - Mobile Web Apps
  - Unified Push Notifications

- Device Runtime
  - Cross Platform Technology
  - Security and Authentication
  - Back-end Data Integration
  - Post-deployment control and Diagnostics
Development: Worklight Studio

- Eclipse-based IDE
- Integrate with Rational Application Developer
- Combining native and standard web technologies in one multiplatform app
- Environment-specific optimization
- 3rd-party libraries integration
- Device SDK integration
- Back-end connectivity utilities
Development: Supported Application Types

- Supports a variety of application types
- Mobile
  - iPhone
  - iPad
  - Android
  - BlackBerry
  - Windows Phone
- Desktop
  - Windows 7 and Vista
  - Adobe AIR
  - Mac OS Dashboard
- Web Applications
  - Facebook
  - iGoogle
  - Embedded web page
  - Mobile web app
Development: Single Shared Codebase

Common code placed in primary file

Environment optimization code is maintained separately
Development: Integrating Best-in-class Tools

Worklight is compatible with prominent HTML5 libraries and tools:
Development: Incorporated Device SDKs
Development: Adapters – Enable connectivity to Enterprise Applications

- Adapters will get the most minimal set of useful information and filter into the JSON format such that the Mobile app can display.
- Save network bandwidth by using JSON format
- Consolidated entry point for all apps
- Loosely Coupled between apps and backend
- Convenience
Development: Back-end Integration

Secure back-end integration
XML-based declarative specification
Multi-source data mashups
Eclipse plug-in supporting auto-complete and validation
Simplified adapter testing
Server-side debugging
Web services and JDBC integration
Access to session data and user properties
## Development Outline: How to Create an Mobile App in Worklight

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<td>Build and deploy to Server</td>
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Development: Centralized Build

Source Code Repository

Worklight Build System
Run-Time: Unified Push Notifications

- Polling Adapters
- Back-end System
- Unified Push API
- Notification State Database
- iOS Dispatcher
- Android Dispatcher
- BlackBerry Dispatcher
- Windows Phone Dispatcher
- SMS Dispatcher
- User-Device Database
- Administrative Console
- Back-end System
- Message-based Adapters
- SMS/MMS Brokers
- Apple Push Servers (APN)
- Google Push Servers (C2DM)
- RIM Push Servers
- Microsoft Push Servers
- Worklight Client-side Push Services
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Run-Time: Dynamic Control of Deployed Apps

- Centralized control of all installed applications and adapters
- Remotely disable apps by device and version
- Customize user messages
Run-time Skinning: Use Cases

- Different Screen Sizes
- Different Screen Densities
- Different Input Method
- Support for HTML5

- The runtime skin is selected the first time the application is started.
- SkinLoader.js
  - Encapsulate the rules and condition on how to determine which skins to use.

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The runtime skin is selected the first time the application is started. SkinLoader.js encapsulates the rules and condition on how to determine which skins to use.
Security: Securing Mobile Apps

Protecting data on the device:
- Encrypted offline cache
- Offline authentication
- Secure challenge-response on startup
- App authenticity testing
- Jailbreak and malware detection

Enforcing security updates:
- Remote disable
- Direct update

Streamlining Corporate security processes:
- Shell as organizational sandbox
- Authentication integration framework
- Data protection realms
- Using device id as 2nd factor

Providing robust authentication and authorization:
- Proven platform security
- SSL with server identity verification
- Code obfuscation

Application Security
Direct Update - Distribution

(*) During development cycles, testers automatically get recent web resources via internal distribution mechanisms and not application stores.
Direct Update – On-device Logic

1. Web resources packaged with app to ensure initial offline availability
2. Web resources transferred to app's cache storage
3. App checks for updates
   - On startup
   - On foreground
4. Updated web resources downloaded when necessary
Worklight Console

- Application Version Management
- Push management
- Usage reports and analytics
- Reports of custom application events
- Configurable audit log
- Administrative dashboards for:
  - Deployed applications
  - Installed adapters
  - Push notifications
- Data export to BI enterprise systems
Data Collection and Analytics
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