

The Froyo Opportunity: Android for the Enterprise

Android Only

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Android is a great OS.

Enterprise: I don't care.

Android has an exploding user base.

Enterprise: I don't care.

Android is open and flexible.

Enterprise: I don't care.

CEO: I want to use my Android phone

Enterprise IT: Uh... ah... okay, we do it

Android has the lowest TCO.

Enterprise: Say that again?!

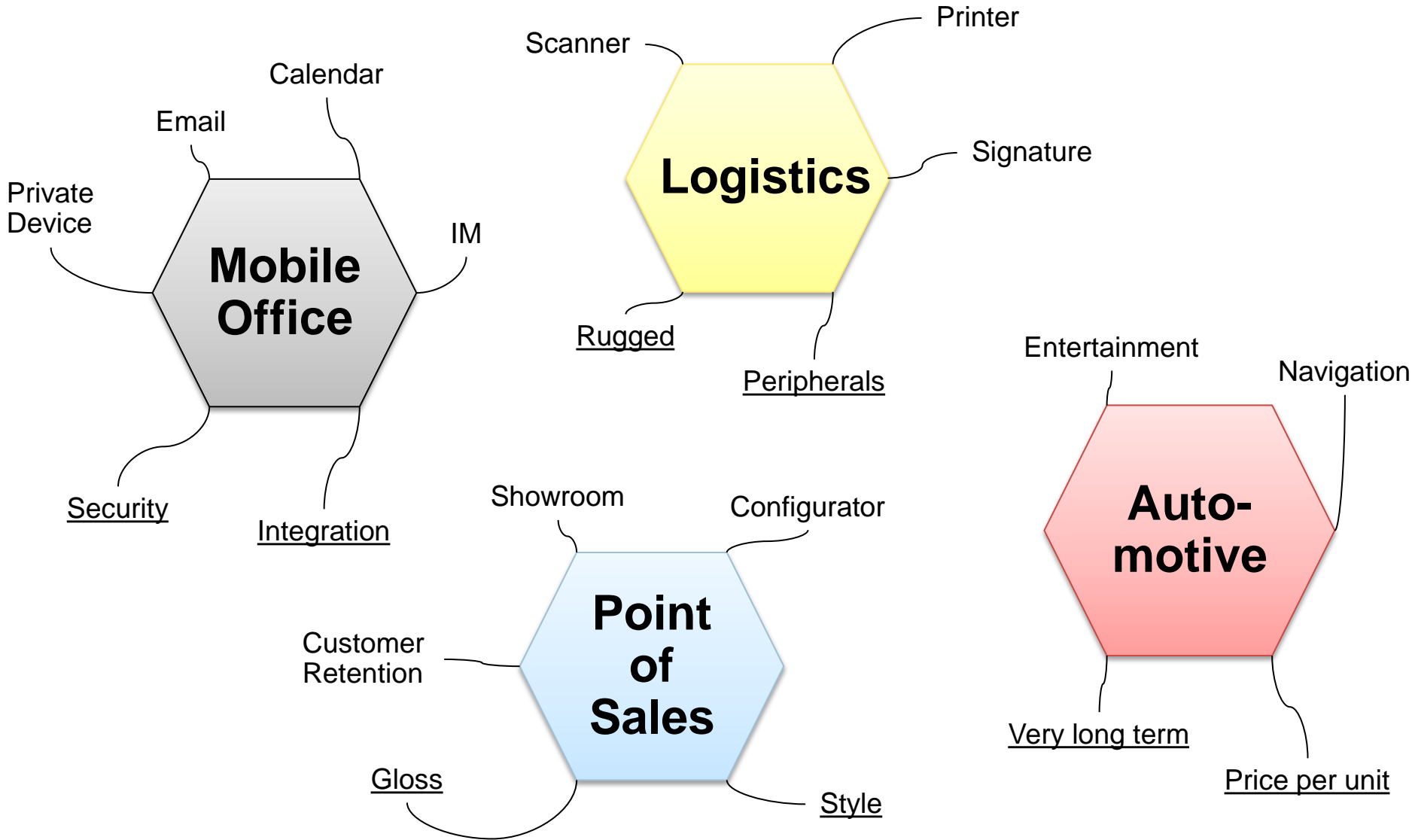




AGENDA

- **Enterprise and the role of the mobile OS**
- Android's opportunity
- Tech Spotlight: Cloud To Device Messaging
- The Competition
- What needs to be done

Mobile solutions are essential for enterprises



The OS is a key part for Mobile Enterprise Solutions

What the Enterprise needs:

- Integration with backend infrastructure
- Special peripherals (e.g. Scanner)
- Security
- Support
- Device Management
- Increased productivity
- Robustness
- Low Hardware cost

What the OS can provide:

Product integration (e.g. Exchange)
Common data formats (e.g. docx, pdf)
Connectivity APIs, WebServices

Device drivers available / extendability

Data encryption, VPN, password policies, sandbox

Technical support

Remote wipe, update (OTA)
Data backup
Device policies

Easy to use UI
Ready-to-use Apps
Simple deployment of custom (enterprise) Apps

Managed OS updates
Backwards compatible

Little HW requirements
Many competing manufacturers



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Android is a great fit for the Enterprise

Rich User Experience / UI

Android can provide Consumer-Grade usability to Enterprise Apps
→ Higher productivity

↓ TCO

Great free development tools

Faster development of enterprise apps
→ Lower development and maintenance cost

↓ TCO

Powerful API

Richer Apps possible, less effort needed → Better Solutions
→ Higher productivity

↓ TCO

Flexible Architecture

Easy to adapt to existing solutions.
→ Lower integration cost.

↓ TCO

Built on Standards (Linux, Java)

Fast learning curve for IT departments.
Easier to integrate with existing standard solutions (e.g. drivers?).
→ Lower maintenance and integration cost.

↓ TCO

Open Source

→ Customization and tailoring easily possible

Froyo is a big step towards the Enterprise



Cloud To Device Messaging

Push available for all Apps.

→ Important for enterprise apps (e.g. notify mobile workforce).

Exchange integration

K.O. Requirement for IT departments and Business Power Users.

Device management API

Remote wipe, Password policy

Important for IT departments. Users don't care 😊

Auto-updating apps

Ensures App updates get deployed as fast as possible.

Wifi hotspot

Enables connectivity for mobile workers

Application data backup

Flexible backup solution which allows data backup on enterprise servers.



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Cloud To Device Messaging (I)



Your App Server



Google



C2DM Server



User's device



`https://android.apis.google.com/c2dm/send
registration_id=xxx
data.<key>=yyy
Authorization: GoogleLogin auth=zzz`

Transfer message data over existing TCP connection.

Fire intent with message data.



Cloud To Device Messaging (II)

Step 1: The Manifest

```
<manifest package="com.example.myapp" ...>

<!-- Only this application can receive the messages and registration result -->
<permission android:name="com.example.myapp.permission.C2D_MESSAGE" android:protectionLevel="signature" />
<uses-permission android:name="com.example.myapp.permission.C2D_MESSAGE" />

<!-- This app has permission to register and receive message -->
<uses-permission android:name="com.google.android.c2dm.permission.RECEIVE" />

<!-- Send the registration id to the server -->
<uses-permission android:name="android.permission.INTERNET" />

<!-- Only C2DM servers can send messages for the app. If permission is not set - any other app can generate it -->
<receiver android:name=".C2DMReceiver" android:permission="com.google.android.c2dm.permission.SEND">
  <!-- Receive the actual message -->
  <intent-filter>
    <action android:name="com.google.android.c2dm.intent.RECEIVE" />
    <category android:name="com.example.myapp" />
  </intent-filter>
  <!-- Receive the registration id -->
  <intent-filter>
    <action android:name="com.google.android.c2dm.intent.REGISTRATION" />
    <category android:name="com.example.myapp" />
  </intent-filter>
</receiver>
```



Cloud To Device Messaging (III)

Step 2: Register for C2DM

```
Intent registrationIntent = new Intent("com.google.android.c2dm.intent.REGISTER");
registrationIntent.putExtra("app", PendingIntent.getBroadcast(this, 0, new Intent(), 0)); // boilerplate
registrationIntent.putExtra("sender", emailOfSender);
startService(registrationIntent);
```

Step 3: Handle registration result

```
public void onReceive(Context context, Intent intent) {
    if (intent.getAction().equals("com.google.android.c2dm.intent.REGISTRATION")) {
        handleRegistration(context, intent);
    } else if (intent.getAction().equals("com.google.android.c2dm.intent.RECEIVE")) {
        handleMessage(context, intent);
    }
}

private void handleRegistration(Context context, Intent intent) {
    String registration = intent.getStringExtra("registration_id");
    if (intent.getStringExtra("error") != null) {
        // Registration failed, should try again later.
    } else if (intent.getStringExtra("unregistered") != null) {
        // unregistration done, new messages from the authorized sender will be rejected
    } else if (registration != null) {
        // Send the registration ID to the 3rd party site that is sending the messages.
        // This should be done in a separate thread.
        // When done, remember that all registration is done.
    }
}
```



Cloud To Device Messaging (IV)

Step 4: Handle received messages

```
protected void onReceive(Context context, Intent intent) {
    String accountName = intent.getExtras().getString(Config.C2DM_ACCOUNT_EXTRA);
    String message = intent.getExtras().getString(Config.C2DM_MESSAGE_EXTRA);
    if (Config.C2DM_MESSAGE_SYNC.equals(message)) {
        if (accountName != null) {
            if (Log.isLoggable(TAG, Log.DEBUG)) {
                Log.d(TAG, "Messaging request received for account " + accountName);
            }

            ContentResolver.requestSync(
                new Account(accountName, SyncAdapter.GOOGLE_ACCOUNT_TYPE),
                JumpNoteContract.AUTHORITY, new Bundle());
        }
    }
}
```



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Enterprise is dominated by few players. Android has it tough.



Loved by big boys in top management



Owns rugged devices



Owns Mobile Office



Owns nothing (yet)

Yeheaaa!!!



Capgemini Case Study: Build new scanners for a postal service.

Use Case: Deploy parcels and mail to > 200 million households.



- For one of the largest logistics provider worldwide.
- Highly critical application. Company's success depends on it.
- Customer wants a modern platform with faster time-to-market.

Sounds great for Android, doesn't it?

Large scale rugged HW manufacturer

Device drivers for scanner, printer

Sophisticated device management

UI optimized for gloves



Oh no! Looks like we have to stick to CE.



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Wrapup & Going forward



Mobile Apps are massively gaining importance for Enterprises: For internal processes, and to reach the customer.

The platform decision is critical especially for long-term internal apps.



Android's strengths are speed and flexibility. With these, it has the opportunity to gain a large share in this growing market.

Google won't do all the work alone. People and companies who believe in Android for the Enterprise (and with an enterprise background) must lead.



First companies are betting on Android: Motorola, Continental, SDG Systems, Wavelink, Good Technology, ...



MOTOROLA

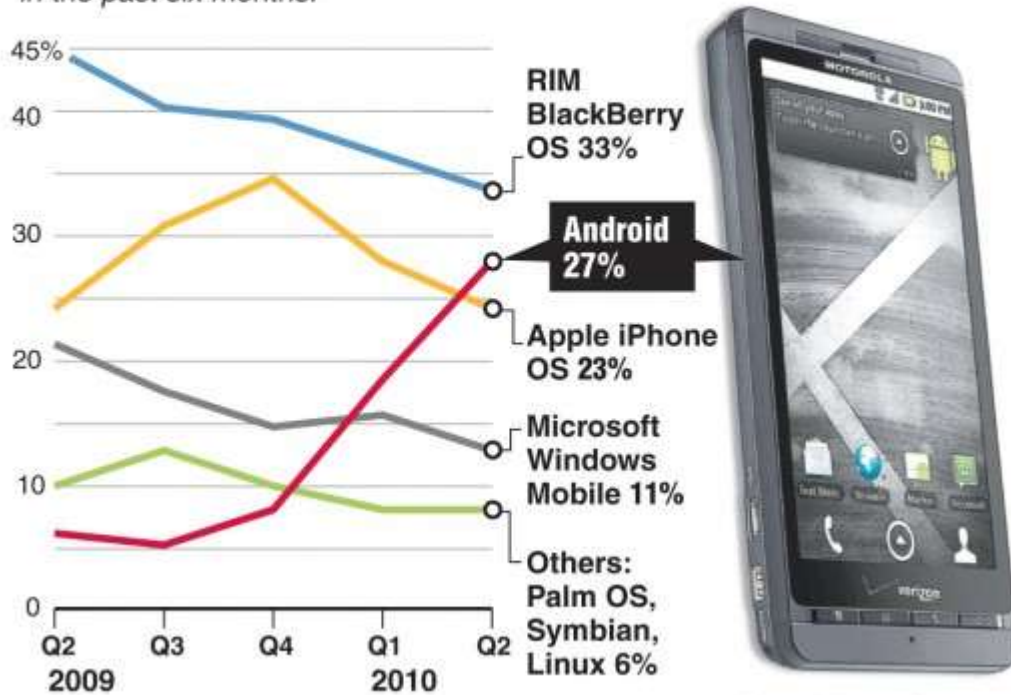


Start Development. Jump on the train.



Google's Android skyrockets

Percentage of U.S. subscribers who bought a smartphone in the past six months:



Source: Nielsen Company
Graphic: San Jose Mercury News

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ANDROID

Thank you very much for your attention!