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http://www.delphicompany.nl

Danny Wind

Deep Dive into creating Android apps

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Danny Wind

http://dannywind.nl

Delphi trainer, consultant and Delphi MVP

Delphi Company is specialized in Delphi, for Delphi professionals by Delphi professionals. Contracting, consultancy, training, desktop and mobile.

As long as its Delphi!

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Deep Dive Android

- 00:00 Architecture

- 00:10 Native Controls

- 00:20 Platform

- 00:30 Deployment

- 00:40 Q & A

Architecture

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One Source to rule them all
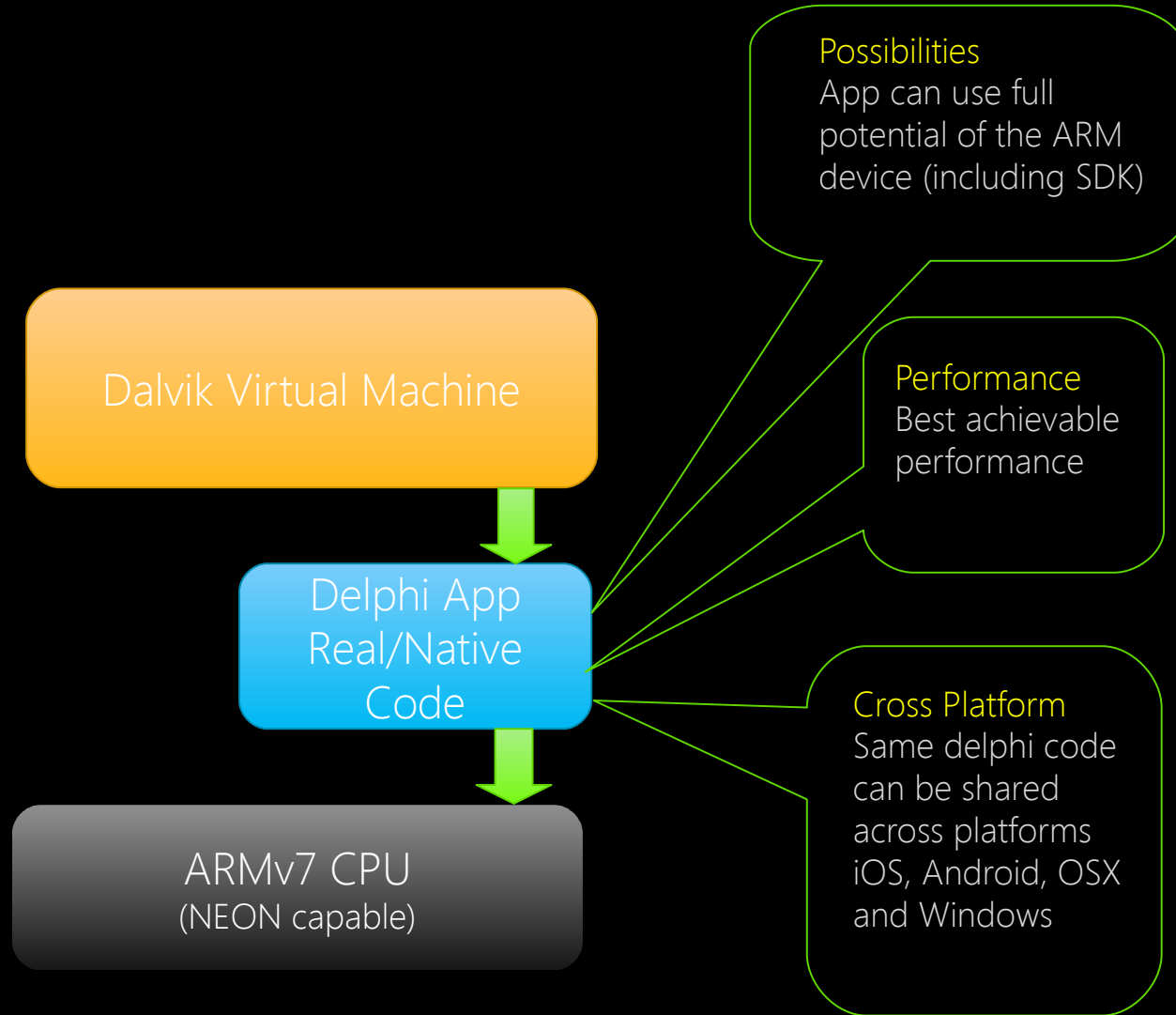
Win,Mac,iOS,Android

FireMonkey Framework Architecture

Language				
Framework				
Display	Microsoft® DirectX®	OpenGL		OpenGL|ES
Platform	Windows	Apple	iOS	Android

Mobile Cross Compilation and Packaging

App Sources

FM Framework

Cocoa SDK

Native Developer Kit

.app in IPA

.so in APK

Android native

Delphi creates compiled binaries of native code that runs directly on the CPU

Dalvik Virtual Machine

Delphi App Real/Native Code

ARMv7 CPU
(NEON capable)

Possibilities
App can use full potential of the ARM device (including SDK)

Performance
Best achievable performance

Cross Platform
Same delphi code can be shared across platforms iOS, Android, OSX and Windows

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Architecture

Demo

Native Controls

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Native Controls

- Custom Picker

- Date Picker

- Time Picker

- Phone Dialer

- Text Editing for TMemo and TEdit
  - Cut/Copy/Paste/Zoom

- Message alerts

- iOS Keyboards
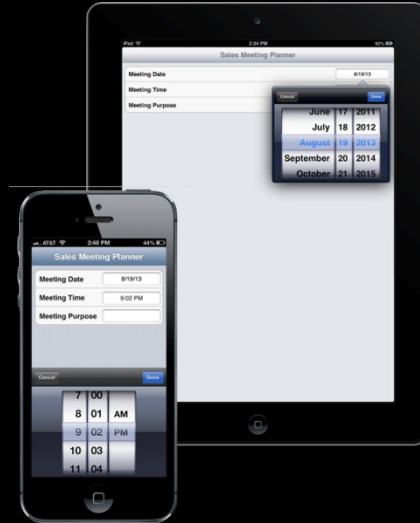
Access Android SDK functions

- most of the Android and iOS SDK is easily accessible via RTL and FM

- benefit of using RTL and FM to access SDK

  - it's easy

  - no need to know platform specific SDK

  - same code across multiple platforms

- but you can access low-level SDK
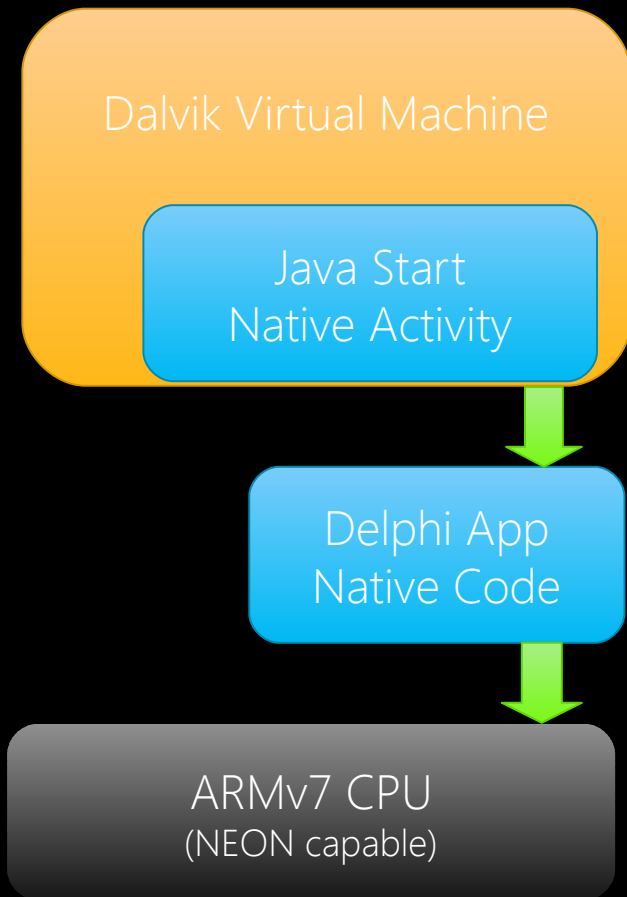
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Native Controls

Demo

Platform

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Running

Each app has one process, each app process has one Dalvik Virtual Machine

Dalvik Virtual Machine

Java Start
Native Activity

Delphi App
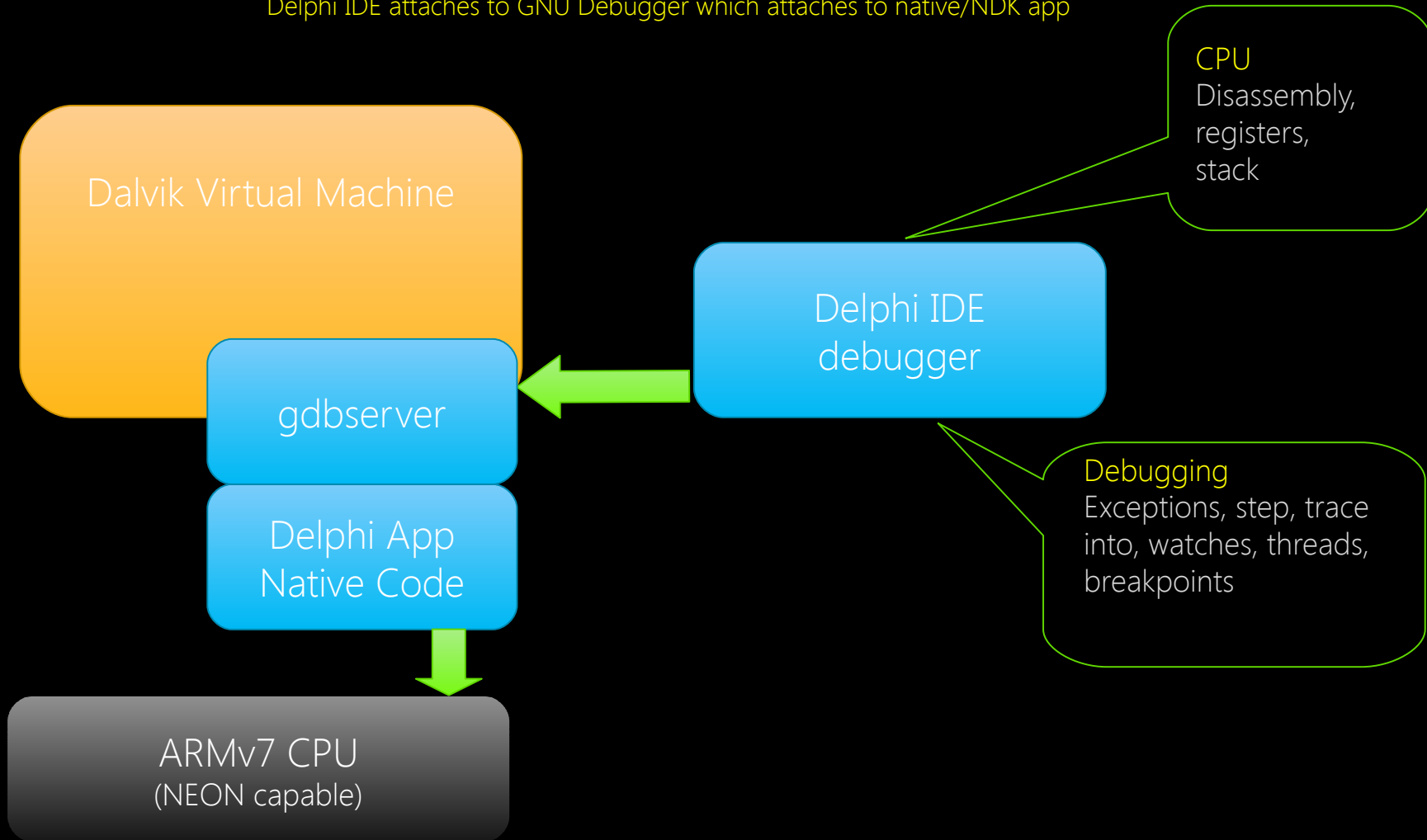Native Code

ARMv7 CPU
(NEON capable)

Android Debug Bridge

adb server and client run on windows development machine
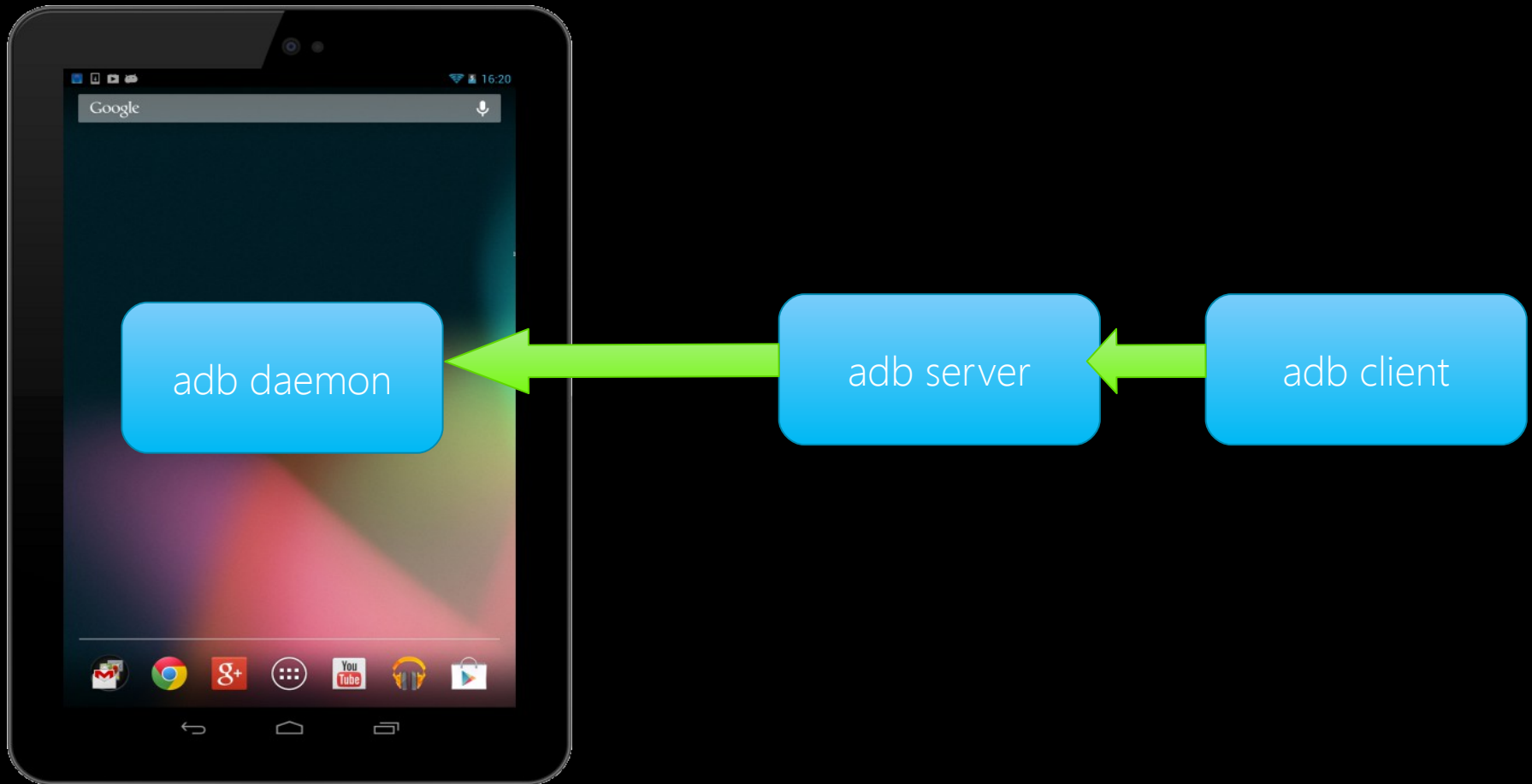
Debugging

Delphi IDE attaches to GNU Debugger which attaches to native/NDK app

Dalvik Virtual Machine

gdbserver

Delphi App
Native Code

ARMv7 CPU
(NEON capable)

Delphi IDE
debugger

CPU
Disassembly,
registers,
stack

Debugging
Exceptions, step, trace
into, watches, threads,
breakpoints

Debugging

The Dalvik Virtual Machine supports logging and debugging

Dalvik Virtual Machine

Dalvik Debug Monitor Server

Delphi App Real Code

ARMv7 CPU
(NEON capable)

CPU
View CPU usage and profile

Logging
Logging on many types of events on OS level and application level.

Network
Analyze network traffic for each app.

Platform
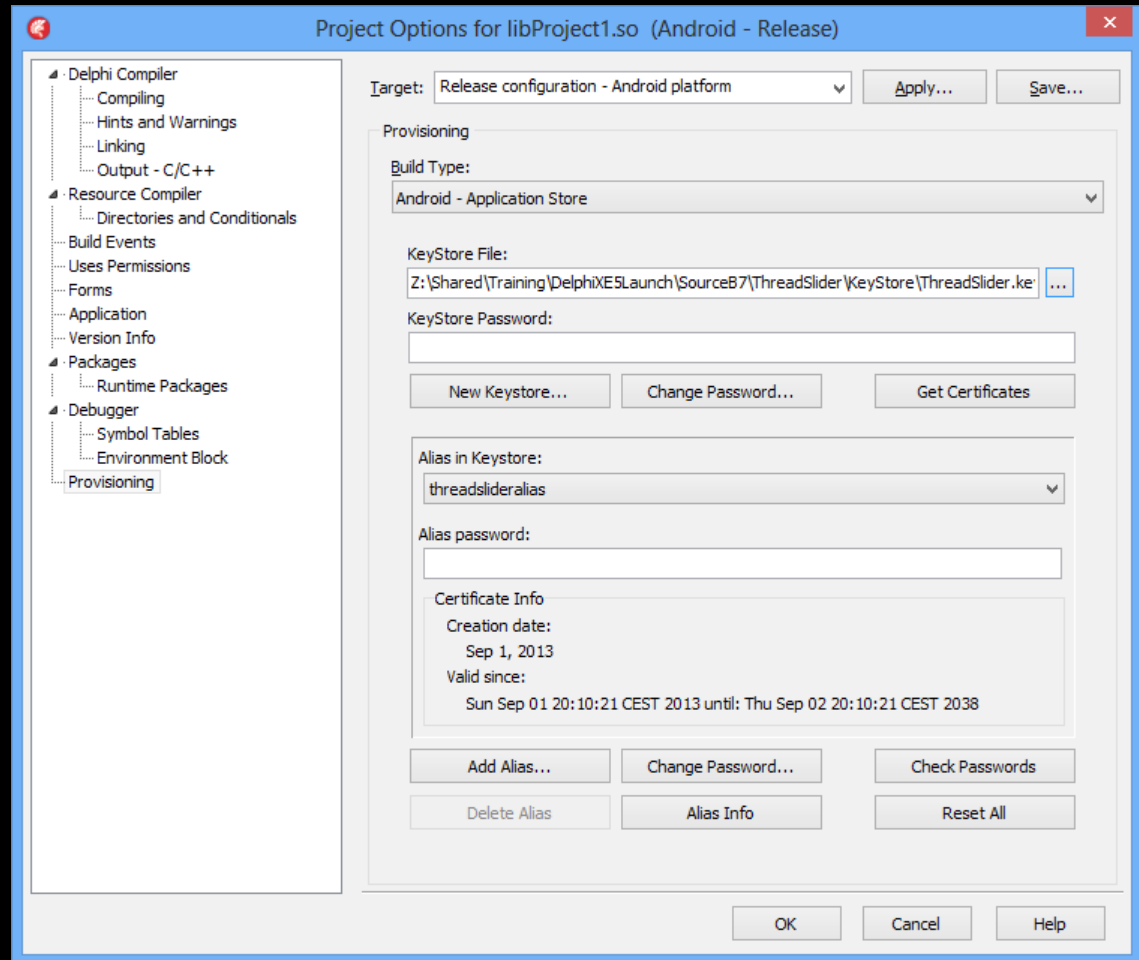
Demo

Deployment

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Android Deployment Options

- IDE to Device

  - debug

  - release

- App Store (Google Play)

  - with signing / keystore

- self deployed

  - build and share .apk

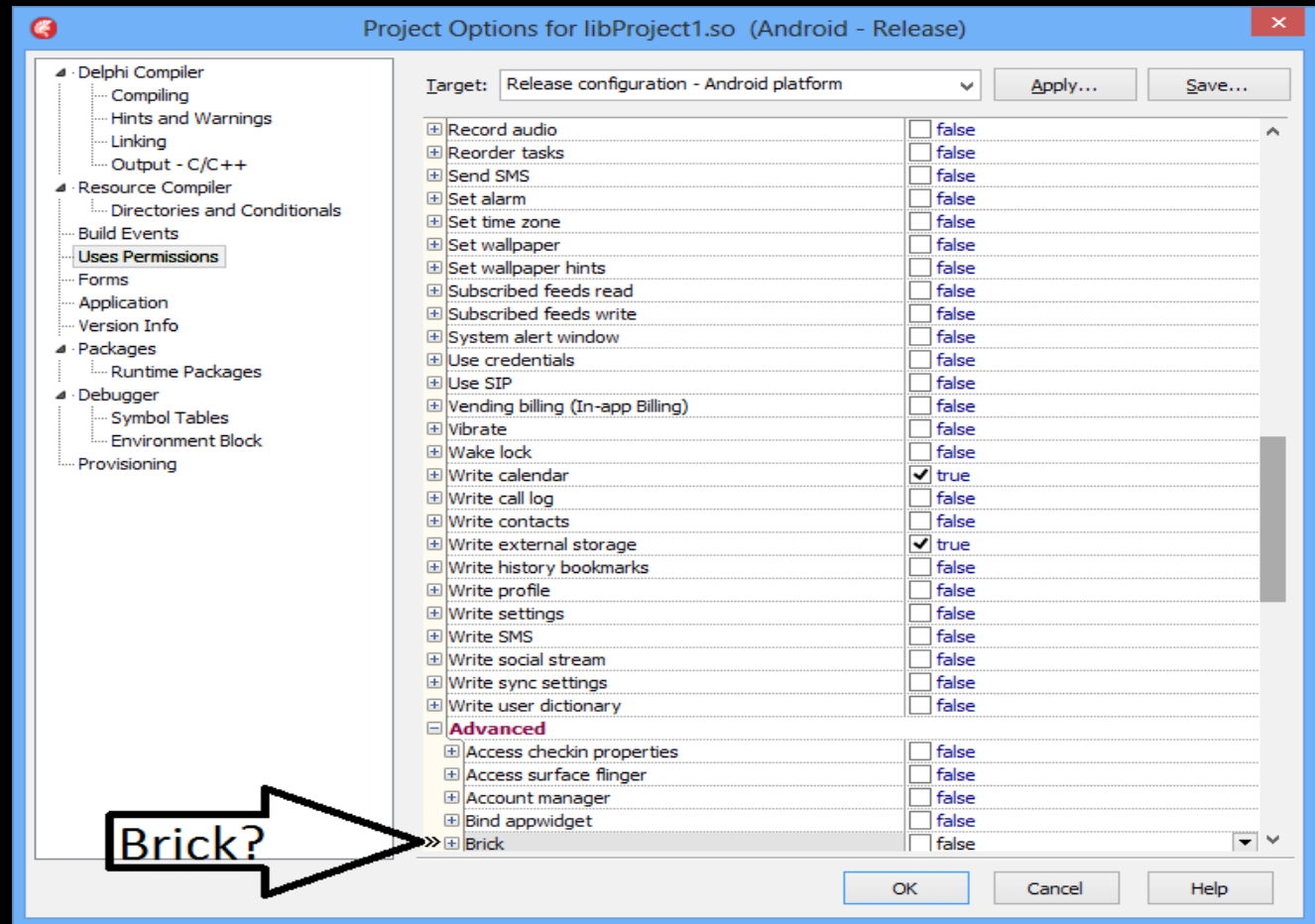 - with signing / keystore

Keystore

- tied to your App in Google Play

- password.....

Uses Permissions

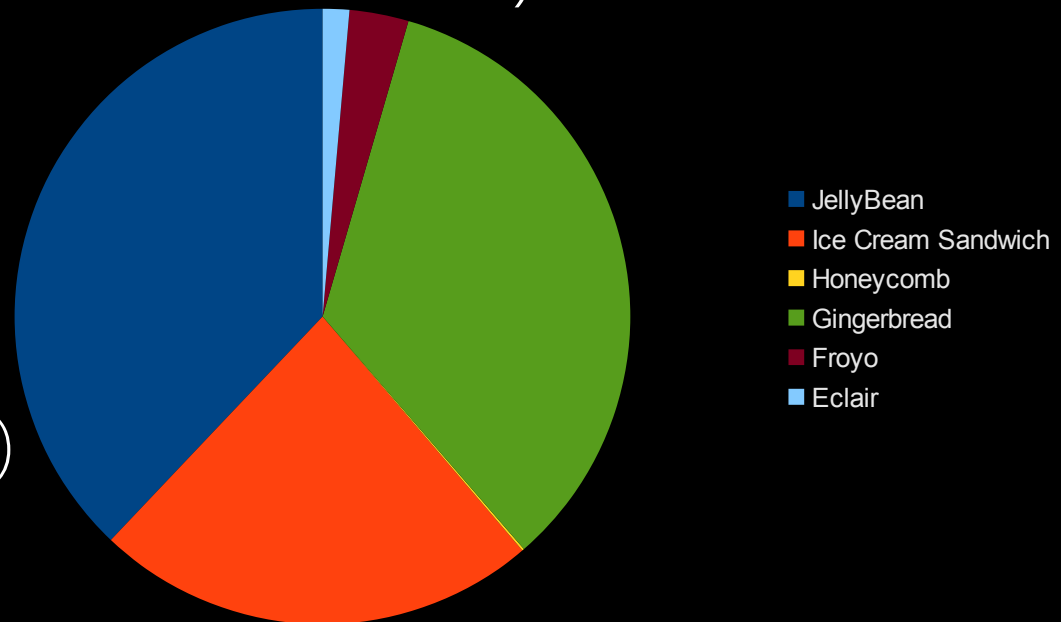- things the app is allowed to do on the device

Android Target Devices

For the end-user / deployment:

- JellyBean (Android 4.1.x, 4.2.x, 4.3.x)

- Ice Cream Sandwich (Android 4.0.3 and 4.0.4)

- Gingerbread (Android 2.3.3 – 2.3.7)

- ARMv7 + NEON

(not supported:
Honeycomb (Android 3.x)
Gingerbread emulator)

- JellyBean
- Ice Cream Sandwich
- Honeycomb
- Gingerbread
- Froyo
- Eclair

Android Development Devices

For development (Debuggable Devices):

- Best : Google Nexus

  Not all devices allow debugging without rooting.

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Deployment

Demo

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Thank You!

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