

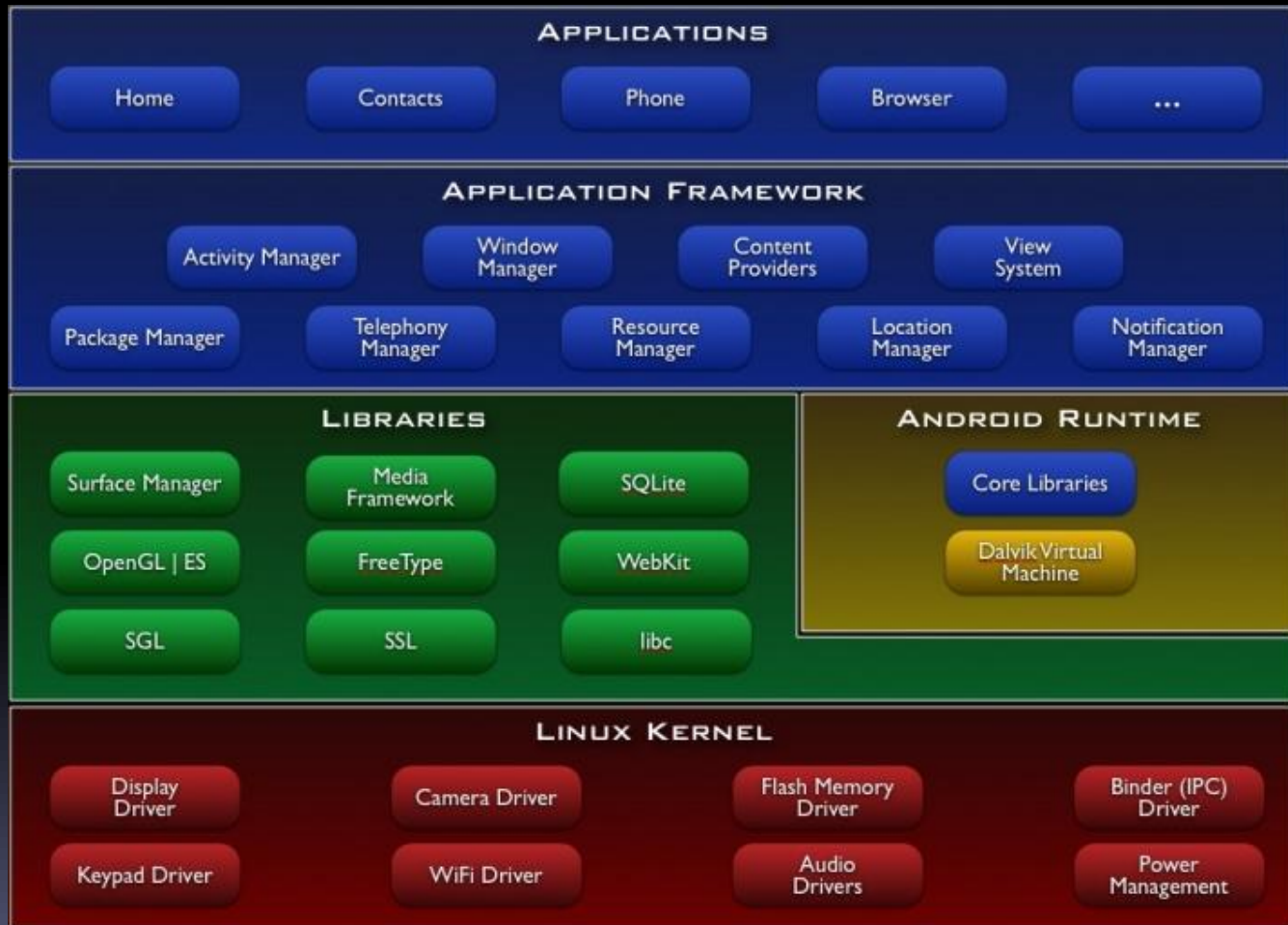


INTRODUCTION TO ANDROID

What is Android?

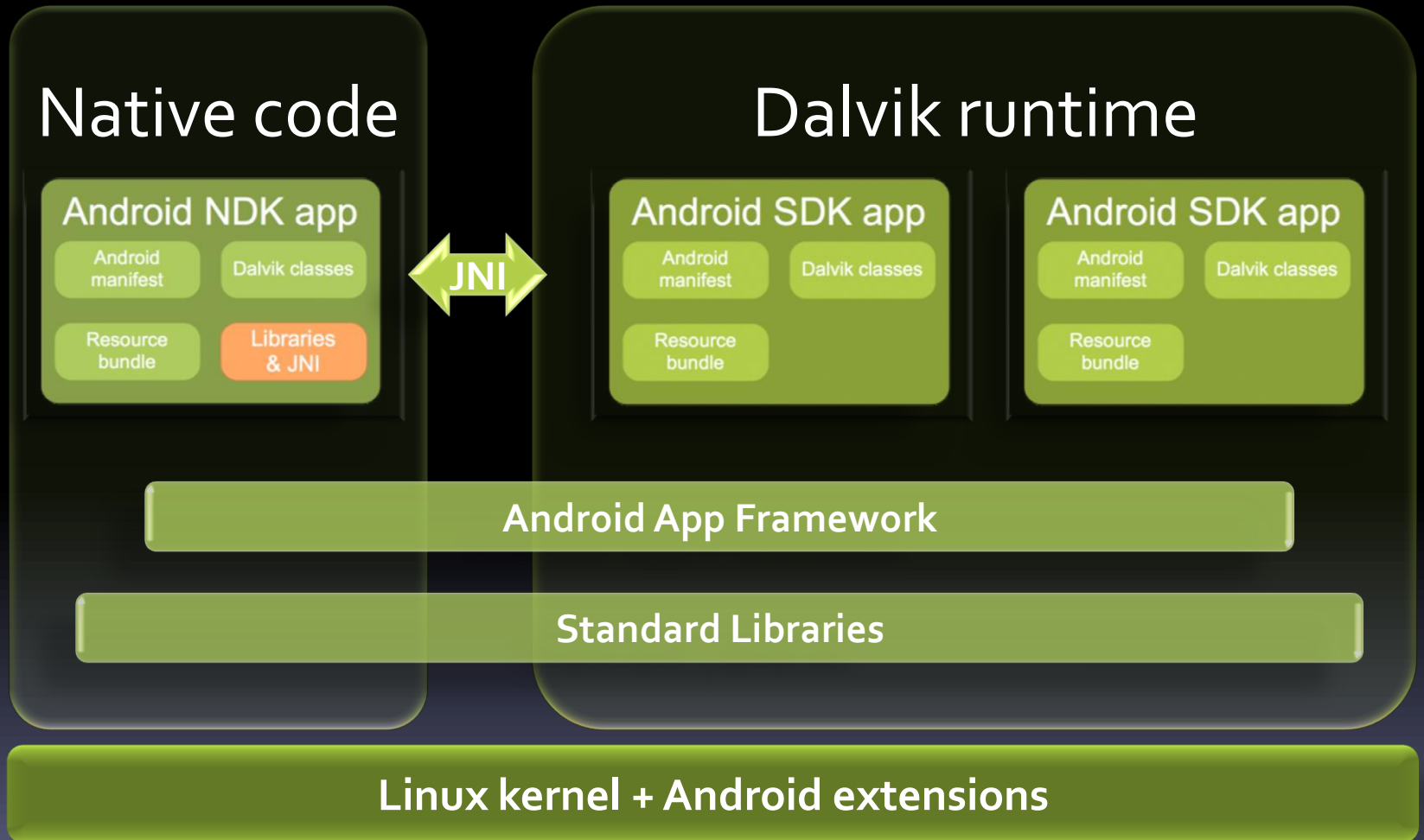
- Software stack for mobile devices
 - Operating system
 - Middleware
 - Key applications
- Open Handset Alliance
- Features
 - Linux kernel
 - Open source libraries: SQLite, WebKit, OpenGL
 - Simple and powerful SDK – java programming

Android Architecture



Source: <http://developer.android.com/guide/basics/what-is-android.html>

Dalvik virtual machine



Application Framework

- Modular design
- Manifest file
- Four types of components
 - Activities
 - Services
 - Broadcast receivers
 - Content providers
- Activating components
 - Intents
 - ContentResolver
- Resources

Manifest file

- Always named `AndroidManifest.xml`
- Included in application `.apk`
- Structured XML file
 - Declare application components
 - Declare permissions
 - Name libraries needed for linking

Activities

- Presents user interface for single, focused activity user can undertake
 - Full screen windows
 - Floating windows / pop-up windows
- Associated with a particular view hierarchy
- May return a value
- Active while visible
- Runs in main thread

Services

- No associated user interface
- Runs in background for indefinite period of time
- Can be started or stopped by other components
- Allows other components to ***bind to*** service
 - Permits remote procedure calls
- Runs in main thread

Broadcast receivers

- Receive and react to broadcast announcements
- Not associated with user interface, but may
 - Start activity
 - Trigger notification
- Can be registered in manifest, or dynamically in code
- Expected to be brief, runs in main thread

Content providers

- Makes specific set of application data available to other applications
 - SQLite database
 - Data file
 - Application data
- Initiated through ContentResolver
- Only active while handling request
- Should be brief – no extended computation

Intents

- Asynchronous messages
 - Activation
 - Inter-process communication
- Explicit intent
 - Name target component
- Implicit intent
 - Compare intent to registered intent filters
- Fields
 - Action, Data, Category
 - Additional fields
 - Extras, Flags