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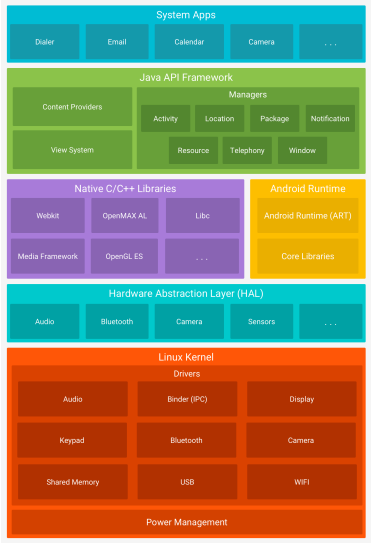
1 Architecture

- A software stack for mobile devices
- Operating system kernel
- Standard middleware
  - Android library support
- Key applications / user interfaces
  - Vendor specific modifications
- LK: threading, low level memory management, driver
- HAL: libs for hardware module
- AR: virtual machine
- NCL: fundamental core functionalities
- API: programming interface
- APP: system apps can be customised.



1.1 Kernel

1.1.1 Modifiactions

Modifications made by android to linux OS

- wakelocks keep the phone awake
- binder interprocess communication
- ashmem shared memory
- oom kills processes when memory is low
- alarm manager wakes up the phone when necessary

1.2 Hardware support

- Bluetooth - BlueZ
- GPS Manufacturer provided libgps
- Wifi `wpa-supplicant`
- Display Standard framebuffer driver
- Keyboard Standard input event
- Lights Manufacturer provided liblights.so
- Audio Manufacturer provided libaudio.so
- Camera Manufacturer provided libcamera.so
- Power Management wakelocks kernel patch
- Sensors Manufacturer provided libsensors.so
- Radio Manufacturer provided libril.so

1.3 Security

Applications are sandboxed

- A security mechanism for separating running applications and data
- This allows applications run in a different context, so if one app crashed, others can stay uneffected
- On Android, each app runs as its own **user**, which guarantees that different users are unable to interfere with each other, access each others files and so on. Root can access the entire system
- Own process, own VM, own UID/AID for different app

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