



Android Architecture

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Agenda

- Linux Vs Android
- Linux Kernel
- Linux Modifications
- ARM vs x86
- Android File System
- Android Power Manager
- Android System
- Dalvik Virtual Machine

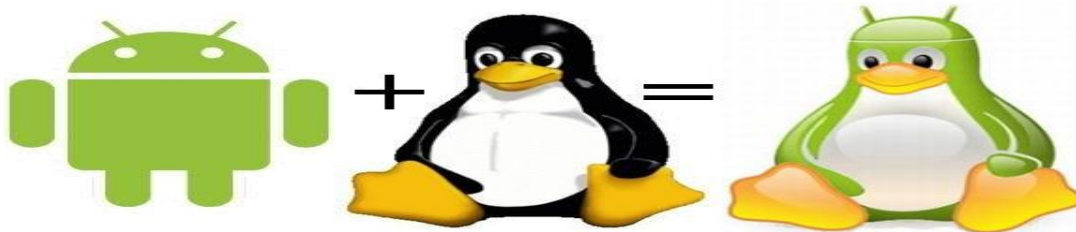
Linux

- Various Architectures
- Standard Linux Kernel
- GNU C library
- Ext3 disk file system
- Advanced Power Management or Advanced Configuration and Power Interface

Android

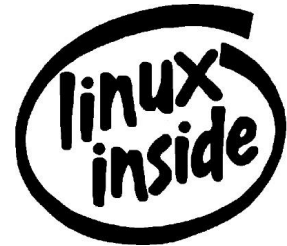
- x86 and ARM architectures
- Standard Linux 2.6 Kernel + Android enhancements
- BIONIC custom C library
- YAFFS flash file system
- PowerManager

Linux Vs Android



Linux Kernel

- Open source operating system
- Works on many architectures
- Intel is trying to compete with ARM
- ARM is the most popular architecture
- Android supports ARM, Intel x86, and MIPS
- MIPS is fairly unpopular in modern devices



Linux Modifications

- Inter process communication management
- Slimmed down C library - BIONIC
- Application memory sharing
- Power management
- Device sleep timers



ARM vs x86

- ARM is RISC while x86 is CISC
- ARM supports mixing of cores
 - Performance driven core
 - Efficiency driven core
- Intel multi-core requires cores to be identical
- Compatibility issues



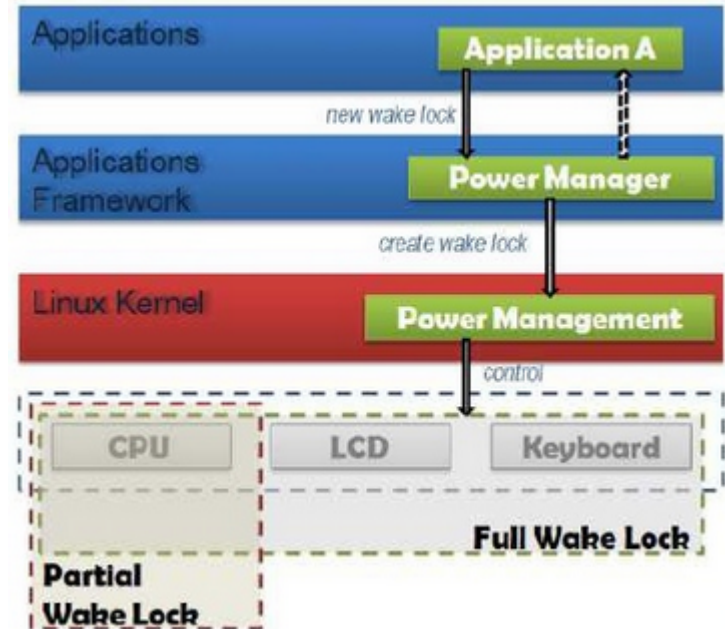
VAFS vs Ext3

- Journaling Vs Journal mode
 - VAFS allows for power failure
 - Ext3 has highest integrity
- File Accessibility
 - VAFS
- Type
 - Flash
 - Hard Disk

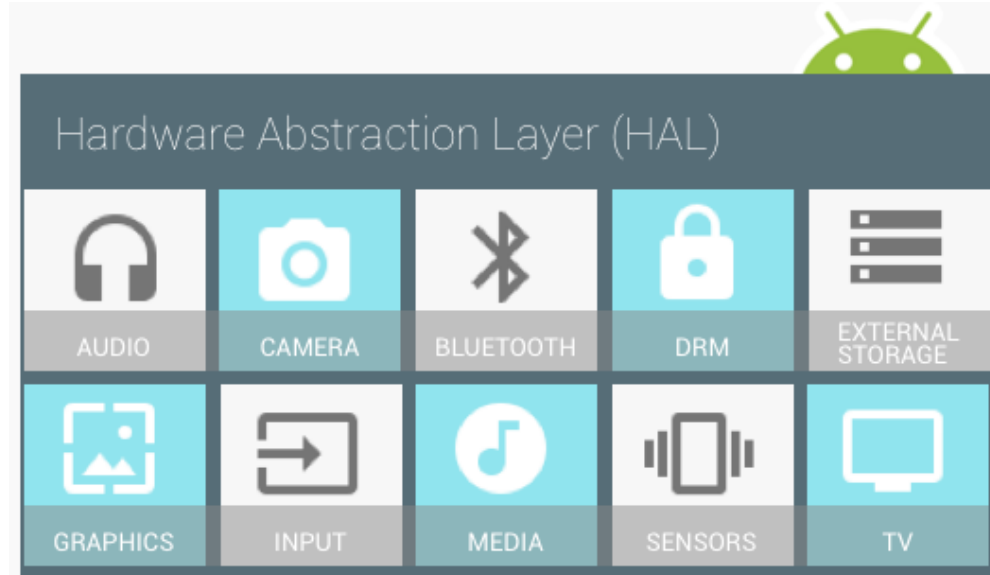
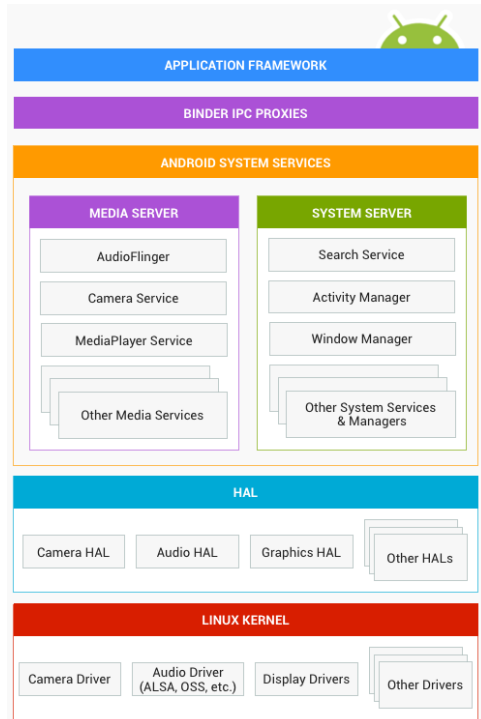


Power Manager

- Wrapper of Linux PM
- Wake lock mechanism
 - Partial wake lock
 - Full wake lock
- Kernel will shut off CPU or LCD to preserve power



Android System



Dalvik Virtual Machine

- Custom Java bytecode
 - Reduce number of necessary reads and writes
- Can hold two instructions
 - 32 bits



References

Sources

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Images

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