Android

A case study of an Embedded Linux Project

Greg Kroah-Hartman
greg@kroah.com

http://github.com/gregkh/android-presentation

Disclaimer

Everything I say here is my opinion alone and not the opinion of my employer Novell. Heck, they don't even realize I'm here giving this talk.

Everything said here is from the viewpoint of an experienced member of the Linux kernel community, who also happens to have a lot of experience in the embedded arena as well.

If you have any questions / concerns / flames, you know where to find me.

Focus on the kernel only.
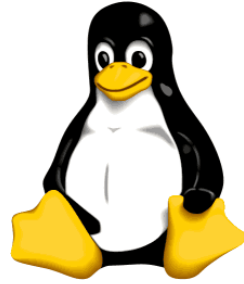# Who cares about userspace?

I

♥

Everything I complain about, can be fixed tomorrow with no changes to any Android userspace program.

Almost all of these changes can only be done if Google developers allow them, as they will require changes to the Android libraries due to the user/kernel interfaces involved.

Things Google did right

Linux

`android.git.kernel.org`

Followed the license of the kernel

Things Google did wrong

`android.git.kernel.org`

Ignored the community

Thought they were special

Thought they were alone

android.git.kernel.org

android.git.kernel.org

6 different full kernel trees

android.git.kernel.org

33 different kernel branches

`android.git.kernel.org`

33 different kernel branches

2.6.25 – 4 branches

2.6.27 – 3 branches

2.6.29 – 9 branches

2.6.30 – 1 branch

2.6.32 – 7 branches

2.6.33 – 6 branches

2.6.34 – 3 branches

android.git.kernel.org

1 old stale Linus tree

`android.git.kernel.org`

2 known stand-alone drivers

android.git.kernel.org

2 known stand-alone drivers

One has 13 different branches

2.6.34-rc2 based branch

283 files changed
47,715 lines added
363 lines removed

2.6.34-rc2 based branch

50% drivers
30% filesystem
15% architecture
5% core

Drivers - 2007

- dcc_tty – arm tty driver
- Synaptics i2c touchscreen driver

Drivers - 2008

- reset key drivers
- GPIO input drivers
- Timed GPIO driver
- ledtrig-sleep debug driver
- Kernel debugger core
- pmem driver
- Loads of MMC changes

Drivers - 2008

- Nvidia Tegra MTD NAND controller
- RTC alarm driver
- Logger
- Ram console
- Switch subsystem
- GPIO switch
- USB Gadget subsystem rewrite

Drivers - 2009

- Apanic debug flash driver

- Uid status

- TI Bluetooth rfkill driver

- Bluetooth core fixes and extensions

Drivers - 2010

- Tegra USB gadget driver
- Tegra framebuffer driver

Security

- Binder

- "secure" networking

Filesystems

- YAFFS2
- FAT Volume ID ioctl
- inotify changes
- Partition uevents
- Special /proc filetype

Networking

- PPP on L2TP Access Controller

- PPP on PPTP Network server

- sysfs files for networking controls

core

- Low memory killer
- wakelocks
- "early suspend"
- ashmem
- panic timeout
- cgroup/cset changes
- futex changes due to broken userspace
- sysctl for swapless systems

Networking

- PPP on L2TP Access Controller
- PPP on PPTP Network server
- sysfs files for networking controls

Ignoring the community

```
commit b0a0ccfad85b3657fe999805df65f5cfe634ab8a
Author:      Greg Kroah-Hartman <gregkh@suse.de>
AuthorDate: Mon Oct 5 16:29:29 2009 -0700
Commit:      Greg Kroah-Hartman <gregkh@suse.de>
CommitDate: Fri Dec 11 12:23:21 2009 -0800

    Staging: android: delete android drivers

    These drivers are no longer being developed and the original authors
    seem to have abandonded them and hence, do not want them in the mainline
    kernel tree.

    So sad :(

    Cc: Brian Swetland <swetland@google.com>
    Signed-off-by: Greg Kroah-Hartman <gregkh@suse.de>
```

You are special and unique, just like everyone else.

It's just a fork, no big deal.