



Palm Pre - A Hacker Paradise?

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Hacker Paradise?

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The Hardware in a
Hacker Context

Linux Kernel

WebOS

Freesmartphone.org

Opportunities

Contact

Outline

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Palm Pre Hardware

- ▶ State-of-the-Art mass market hardware
- ▶ Touchscreen, keyboard, 3G, wifi, camera, GPS, you name it
- ▶ Sexyness factor brings in big customer base
- ▶ Powerful and hacker friendly OMAP3 SoC

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OMAP3430

- ▶ Public datasheets
- ▶ Similarity to Beagle Board
- ▶ Boot from USB, unbrickable
- ▶ Fancy coprocessors like NEON SIMD, C64x+ DSP and more

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Linux Kernel

- ▶ Based on 2.6.24
- ▶ Good code, but sadly one big patch without upstream intention
- ▶ 9.6 MByte, 957 files changed, 328793 insertions(+), 4558 deletions(-)
- ▶ No signature chain against the owner
- ▶ Running a selfcompiled kernel since weeks :-)

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FOSS components

- ▶ Picked plumbing components
- ▶ Kernel, udev, upstart
- ▶ ffmpeg, gstreamer, pulseaudio, alsa
- ▶ wpa_susuppllicant, pppd, libpurple
- ▶ webkit, mupdf, dbus

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Closed components

- ▶ Added Middleware on top
- ▶ Bluetooth, Wireless Connections, Telephony
- ▶ Media, Storage, Synergy, PDF, Office
- ▶ Power, Audio
- ▶ And everything above

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Restrictions

- ▶ Restricted XMPP to gmail.com (Harald to the rescue)

objdump -d shows us:

```
dfc: 1a000003 bne e010 <login+0x740>
e000: e51b004c ldr r0, [fp, #-76] ; 0x4c
e004: e59f1410 ldr r1, [pc, #1040] ; e41c
e008: e59f2410 ldr r2, [pc, #1040] ; e420
e00c: ebfff058 bl a174 <_init+0x140>
```

the first jump needs to change from a BNE into a BE.

Community

- ▶ Palm wants application developers
- ▶ Big community at webos-internals.org
- ▶ Preware
- ▶ Communication but no real collaboration

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- ▶ A chance to replace closed middleware components
- ▶ FOSS stack from ground up
- ▶ Understanding the modem protocol

```
PACKET: dir=read fn='/dev/modemuart' len=149/0x95
```

```
full packet:
```

```
fa 60 83 1c 0a 00 00 00 00 00 06 00  .‘.....  
00 00 43 55 30 2e 35 2e 31 33 28 31  ..CU0.5.13(1  
32 37 29 00 00 42 75 67 20 46 69 78  27)..Bug.Fix  
65 00 00 00 00 00 00 00 00 00 00 00  e.....
```

Opportunities

- ▶ Modem protocol research
- ▶ Replace non-free components
- ▶ Fruits from the beagleboard community (gststreamer, armv7a optimizations, ...)
- ▶ Mainline kernel support (Thanks TI and Nokia)
- ▶ DSP codecs for audio and video

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- ▶ Slides are on the FOSS.IN website
- ▶ I am around the whole event
- ▶ Drop me a mail at stefan@datenfreihafen.org
- ▶ Now go and hack!

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