

Making the Linux Kernel better

(without coding)

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About me

- Linux Kernel consultant & hacker
(mostly embedded & driver frameworks)
- I2C maintainer
- like to share knowledge and enable people to get active
- like muted devices, especially during talks

Unable to open device

Please make sure the camera is connected and that the correct driver is installed.

Obtain the ID

- `lsusb`
- `lspci -nn`

Note

Existing entry does not mean existing driver and vice versa.

Submit the ID

This is crowdsourcing!

- <http://www.linux-usb.org/usb-ids.html>
- <http://pciids.sourceforge.net/>

Easily done, yet really useful for developers.

Get more info, but check twice

- (obviously) search for the ID/name
- check forums, bug trackers, HW databases...
- watch out, lots of outdated info out there

Check the Windows-Drivers

INF-Files

Text files describing the driver to be installed.

To obtain it, you might need:

- unzip
- unshield, cabextract
- **WINE**

Look here then:

```
~/.wine/drive_c/windows/inf
```

```
~/.wine/drive_c/windows/profiles/<user>/Temp
```

Check the Windows-Drivers II

If the driver is generic, it will usually contain

- multiple IDs the driver will be responsible for
- name of the chipset used internally
- some other relevant info

Example (another cam)

```
%USB\VID_0AC8&PID_0302.DeviceDesc%=  
...USB\VID_03F0&PID_1B07
```

Example (this cam)

...USB\VID_**0c45**&PID_**624c** ; SN9C201 + MI1320

...

...USB\VID_**0458**&PID_**7045** ; SN9C201 + MI1320
for KYE Look 1320 V2

Find the corresponding driver

Use the Linux Kernel Driver Database. Search for the **new ID** together with the term `lkddb`.

Tweak the driver

```
$ su
# modprobe gspca_sn9c20x
# cd /sys/bus/usb/drivers/gspca_sn9c20x/
# echo 0458 7045 > new_id1
```

¹So useful, yet so unknown. Available for USB, PCI/Cardbus, and PCMCIA

Let's try that!

Data is missing

- generic drivers often need parameter
e.g. sensor type, bus addresses, various flags
- wrong driver data did neither kill computer nor camera :)
- up to 3.13, driver specific data couldn't be passed²
- since 3.14, it is possible to pass a *reference id*

²for USB, that is

Trying again

```
# echo 0458 7045 > remove_id  
# echo 0458 7045 0 0c45 624c > new_id
```

Showtime again!

Let's try that!

Write a mail

Hello,

I have \$camera and could get it to run with Linux 3.14 by echoing its usb id '0458 7045' and the reference id '0c45 624c' to the new_id-file of \$driver³.

I am not familiar with creating patches, so I'd be happy if someone could pick this up.

Regards,

³maybe copy the echo line from above

Whom to send/CC it to?

- `check modinfo <module_name>`
- check the head of the source file
 - LKDDDB has a link if sources not present
- `scripts/get_maintainer.pl -f <src_file>`
 - if kernel sources present
- when in doubt: `linux-kernel@vger.kernel.org` (LKML)
- and me, of course: `wsa@the-dreams.de`

The gain

- cam works for you
- cam will work for all others
- you should get credit when support is added:
Reported-by: Your name <your_name@provider.org>

If you are still interested...

Next step: Create a patch

- Read: Documentation/development-process/*
- Read: Documentation/SubmittingPatches

If you like hacking...

- LED doesn't seem to work
- maybe add V4L control for autoexposure

The End

Thank you for your attention!

Questions? Comments?

- right now
- anytime at this conference
- wsa@the-dreams.de