

Television on Linux

Devin J. Heitmueller
dheitmueller@kernellabs.com

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What are we going to talk about?

- A quick primer on terminology and how TV transmission works
- The state of TV tuner device support under Linux
- Applications for watching TV under Linux

Standard Disclaimers

- The views expressed here are strictly my own and not representative of my employer.
- That fact that I work for a company that makes PC based TV tuner products should not be interpreted as an endorsement of their products.
- This presentation is scoped to stuff we care about in the United States.

Let's Talk about TV...

- Analog TV (a.k.a – the dark ages)
 - NTSC
 - Composite/S-Video
 - Component video
- Digital TV
 - ATSC (Over-The-Air digital broadcasting)
 - ClearQAM (unencrypted cable)
 - CableCard (encrypted cable)

Choosing the Right Tuner

- Different use cases call for different tuners.
- "When all you have is a hammer, everything looks like a nail"¹

1. My father

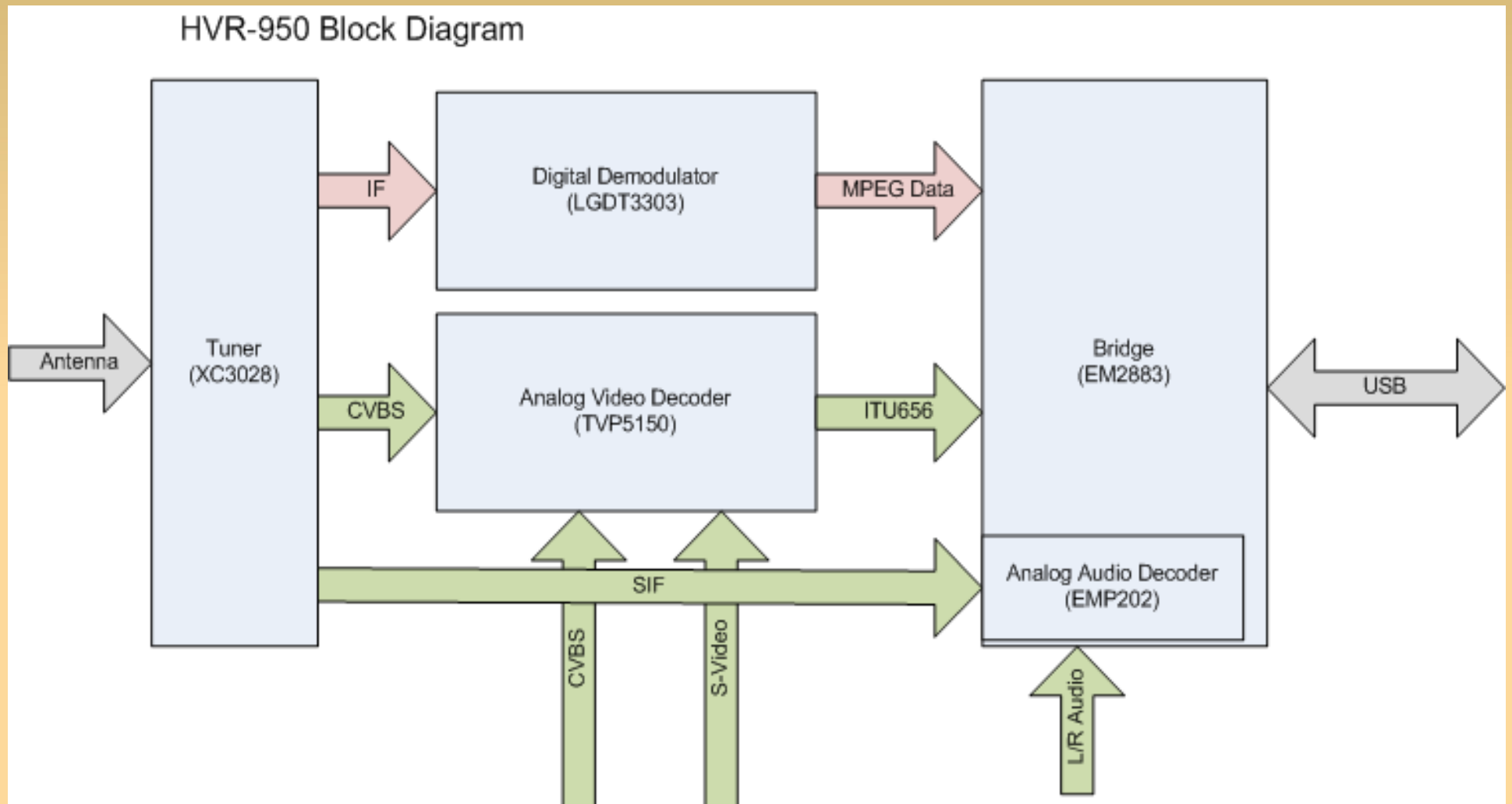
1. Abraham H. Maslow (1966). The Psychology of Science. p. 15.

TV Tuner Hardware

- Different form factors (USB, PCI, PCIe, Net)
- Different input types (analog, HD component, ATSC, ClearQAM)
- Onboard hardware compression? (MPEG2)
- Number of inputs?
- Ability to do digital and analog capture simultaneously?
- IR receive/transmit support

Let's look at an example...

LinuxTV Tuners



Much more detail:

<http://www.kernellabs.com/blog/?p=1045>

What users see...



So how well do they work under Linux?

- Well, that depends....
 - Feature completeness
 - Driver maturity/stability
 - Availability of chipset documentation/datasheets
 - Application compatibility
 - Oh, and you want the remote control to work too?

Is my tuner supported?

- Before purchase
 - Check <http://www.linuxtv.org/wiki>
 - Check Linux-media mailing list archives
 - Ask on #linuxtv or #mythtv-users
 - Google!

Be forewarned: the "Product Model XYZ" mentioned on the web may not be the same one you end up buying...

Is my tuner supported? (2)

- After Purchase:
 - Plug in the device
 - Power up
 - Look for the following new devices:
 - `/dev/video0` (for analog capture devices)
 - `/dev/dvb/adapter0` (for ATSC/QAM capture)
 - Not working? Check `dmesg` output.

Application Usage Patterns

- "Watch the occasional TV show on my laptop"
- Videotape conversion/archival
- Home Theatre PCs
- Webcams
- Security DVRs
- Gaming (Yeah, you read that right)

Applications

- Analog only
 - TVtime
 - XawTV
- Digital Only
 - Kaffeine
 - MeTV
- Analog and Digital
 - MythTV
 - VLC

Note: the linuxtv.org Wiki has a more comprehensive list.

MythTV Tips

- If this is your first system, don't start with an old PC that was in the back of your closet.
- Spend 40 bucks and buy a decent video card
- Use a distro that includes MythTV binaries
- Make sure the tuner works with other applications first
- Be sure to use MythTV "input groups" with hybrid cards

Useful commands for debugging

- `scan /usr/share/dvb/atsc/us-ATSC-center-frequencies-8VSB`
- `azap -r WKBD-HD`
- `mplayer < /dev/dvb/adapter0/dvr0`
- `dvbtraffic`

Ongoing LinuxTV Community Challenges

- Too few developers contributing
- Overhead for contribution
- Knowledge barrier to entry
- Applications "barely work"
- Poor end-user documentation
- Regressions are commonplace
- Short product lifecycles

Patches and documentation always welcome!

More Info....

- <http://www.linuxtv.org>
- <http://www.mythtv.org>
- <http://www.kernellabs.com>

- `#linuxtv`, `#v4l`, `#mythtv-users` - `irc.freenode.net`