HDTV + Linux

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Agenda

• Over the air HDTV reception
• High Definition TV Acronym Soup
• HDTV on your Linux system
Receiving HDTV

- **Over the air**
  - ATSC using 8VSB
  - 19.39 Mbit/s data rate
  - 2 1080i streams / channel

- **Cable Company**
  - QAM 256
  - 38.4 Mbit/s data rate
  - 6 SD vs 2 HD channels
  - QAM 64 used by mom’n’pop cable operators
Antenna Orientation

- AntennaWeb.org
- UHF vs VHF
  - Some areas need both antennas!
- FCC Database
- Broadcast Television Station Search
  - Google Maps “Link to this page” URL reveals GPS location
Antenna Type

- HDTVPImrer.com
  - Amazing site!
- AVSForum.com
  - HDTV Reception Hardware
- Silver Sensor
  - Recommended indoor antenna
- Channel Master 7777 pre-amp
- Channel Master 4228
Buying and Regulations

• Buying
  – AntennasDirect.com
  – SolidSignal.com

• FCC Rules
  – Over-the-Air Reception Devices Rule
  – CableCard on July 1, 2007
  – Must Carry
TV Tuners

- **pcHDTV**
  - 5500 PCI
- **Air2PC**
  - HD5000AV PCI
- **HDHomeRun**
  - Dual tuner
  - Network appliance
  - (GUI) *winDOwS*, (CLI) Linux and Mac OS X*
pcHDTV 5500

• Xine-hd
  • Audio and video drop outs

• dvb-atsc tools
  • http://pchdtv.com/downloads.html
  • dtvscan -d Card#
  • dtvsignal -d Card# Channel#

• Kernel module issues
  • Upgraded Etch to 2.6.21
  • LG and Connexant drivers are up-to-date in the mainline
atscap

- Previously pchdttvr by inkling at nop.org
- Simple standalone recording software
- Channel scanner
- Signal strength meter
- Built-in EPG
- SourceForge project
- Use this to test your cards
Using atscap

• Channel Scan
  – pchdtvr -i0 -S
  – /etc/pchdtvr.0.conf

• Manual Record
  – pchdtvr -i 0 -c pchdtvr.0.conf -s 300 42 -o 42Fox.ts

• Interactive use
  – Not easy
  – Web Interface is under development
KnoppMyth

• Built with R5E50
• Steps
  – Pre-partition your disk
    • LVMs will be added AFTER install
  – Install to disk and choose manual config
  – Boot
    • mythtv-setup
    • mythfilldatabase
    • /etc/init.d/mythtv-backend start|stop
mythtv-setup

- **Add Cards**
  - Choose the DVB DTV Capture Card
- **Video Sources**
  - Choose bcast frequency
- **Input connections**
  - Associate cards with video sources
- **Channel Editor**
  - Defaults to broadcast, ATSC and 8VSB
Additional Information

- ATSC
  - Linux drivers are called dvb
- PSIP
  - Channel and system information
- Signal Strength
  - Digital meter, not the same as analog
Playback

• Processor
  – Dual core
  – Multimedia features

• Video Card
  – Intel GMA
  – Nvidia GeForce 6150

• Hard Drive
  – Any 7200 rpm IDE/SATA will do
  – Capacity is key, not speed
Playback continued

• Audio
  – Audiophile cards support is poor
  – S/PDIF pass through to your receiver

• Memory
  – Follow manufacturer specifications

• Power Consumption
  – Silent PC Review
  – Logic Supply to buy SFF boards
480 720 1080 What?

- Progressive Scan vs Interlaced
- Frames per second
- Compression
- Scaling
- Viewing distance
- 16:9 vs 4:3 vs 3:2 Pulldown
Station Resolutions

- ABC  720p
- CBS  1080i
- NBC  1080i
- Fox  720p
- CW   1080i
- MYNTV 1080i
- PBS  1080i
Cabling Options

• HDMI.org
  – HDMI Specs
    • 1.2 Adds some extra PC support
    • 1.3 Adds Dolby TrueHD audio
  – Scales to 1080p

• DVI
  – Usually works with a converter and HDMI 1.2

• Component
  – RGB (analog) or Y’PbPr (digital)
  – Scales to 1080p

• VGA
  – Not all HDTVs have this input
Technical References

• ATSC

• PSIP
MythTV References

• The Linux HTPC Howto
  • http://www.linuxis.us/linux/media/howto/linux-htpc/

• PenLUG
  • http://www.penlug.org/twiki/bin/view/Main/DigitalTelevision

• KnoppMyth
  • http://www.mysettopbox.tv/
  • http://www.knoppmythwiki.org/

• LinuxTV (V4L, DVB)
  • http://linuxtv.org