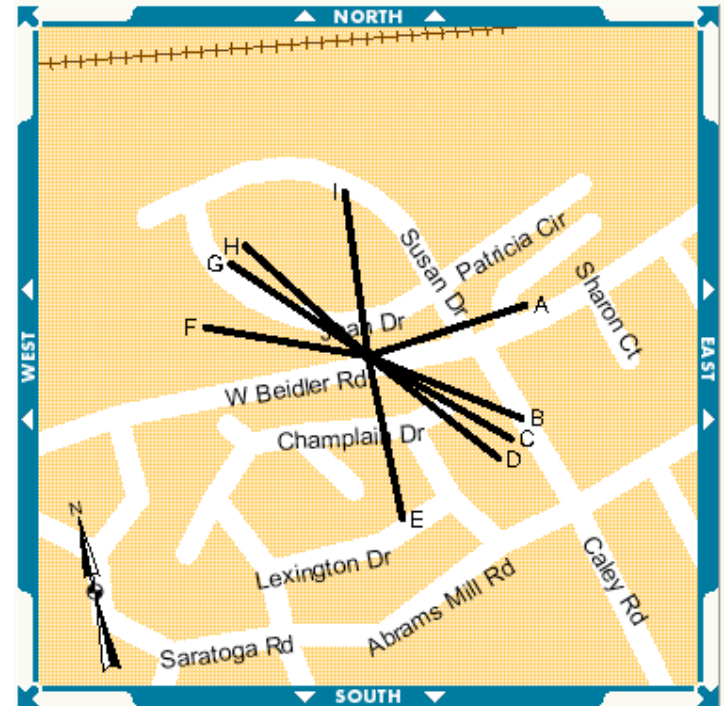# HDTV + Linux

Amul Shah
TuskenTower@gmail
PLUG West

Agenda

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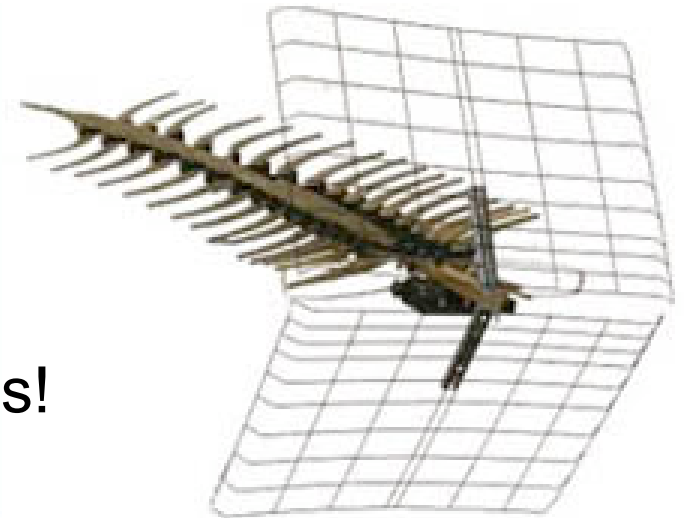- HDTV on your Linux system

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
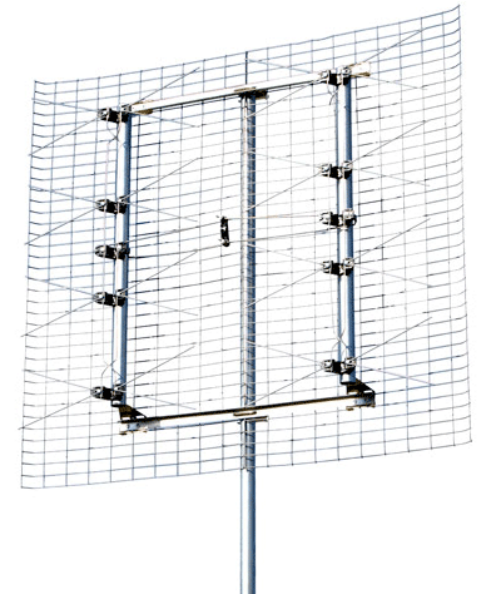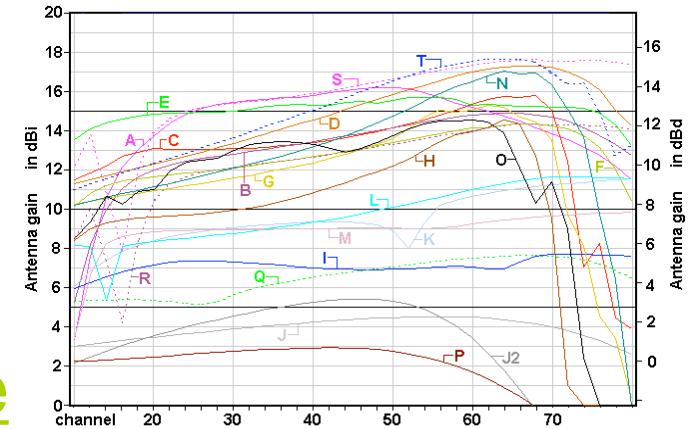 - QAM 64 used by mom'n'pop cable operators

Antenna Orientation

- AntennaWeb.org
  - http://www.usps.com/zip4/
- UHF vs VHF
  - Some areas need both antennas!
- FCC Database
  - http://www.fcc.gov/mb/video/tvq.html
- Broadcast Television Station Search
  - http://www.2150.com/broadcast/default.asp
  - Google Maps "Link to this page" URL reveals GPS location

Antenna Type

- HDTVPrimer.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 pchdtvr 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'$P_B$$P_R$ (digital)
  - Scales to 1080p
- VGA
  - Not all HDTVs have this input

Technical References

- ATSC
  - http://www.atsc.org/
- PSIP
  - http://www.psip.org/

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