The BTTV HOWTO

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Revision History

Revision 0.9	2005−01−29	Revised by: jhs
Initial rewrite		

This document was written to assist the reader in the steps necessary to configure and use a video tuner card based on the popular Bt848 and Bt878 chipsets within the Linux operating system.

Table of Contents

1. Introduction

This document was written to assist the reader in setting up and configuring TV tuner cards based on the Bt848 or Bt878 chipsets in the Linux operating system. It outlines how to enable the necessary kernel and/or software support and various television applications and software methods of capture usable with your device. While there is some attempt to catalog individual cards and features in Appendix C, the ultimate best source of information about your card and its capabilities will be found in the printed manual that came with your device or the manufacturer's website.

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1.3. New Versions

This is the first release of the initial rewrite.

The latest version number of this document can be found here.

1.4. Credits

Eric Sandeen deserves profuse thanks for writing the original Bttv−HOWTO and allowing me to assume its maintenance. Thanks also to Greg Watson for use of the script in Appendix D

Also, I would like to thank Marla, without whose encouragement this project would not have been possible.

1.5. Feedback

Please send any information you may feel important to the following email address: `<hshane[AT]austin.rr.com>`, whether you have a correction, addition or update. I welcome suggestions on how to improve this document.

1.6. Conventions Used in this Document

The following conventions are used in this document and are outlined here for those who may not yet have a complete understanding of how to access and control the underlying operating system in Linux, which is usually via the Bash shell.

First, filenames are referenced in a paragraph like so: `/path/file`

Commands in Linux are executed (or 'called') at the command prompt, otherwise known as the 'command line.' If you are in the non−graphical (text−based) environment, you will usually be presented with the Bash shell prompt which is a dollar sign:

```
$
```

...or the hash mark:

```
#
```

...if you have logged in as root or have otherwise acquired root, or 'superuser' privileges. You can also access the Bash shell in the X window system, otherwise known as X or X11, with an xterm or similar X−terminal−emulator. Commands to be performed at the Bash prompt, but referenced in a paragraph of this document, usually look like this: **do this now**

Commands and/or the resulting output of commands may also be outlined with screen output in their own paragraph or heading:

```
$ date
Sun Jul 27 22:37:11 CDT 2003
```

When a command is written in front of the Bash prompt (e.g., **$ date** above), it is assumed the [Return] or [Enter] key has been pressed after the command, possibly followed by the output on a new line as shown in the preceding example.

2. The BTTV Hardware

2.1. Bttv Basics

If you haven't figured it out by now, this document deals with the Linux−specific configuration of frame grabber cards that include the Conexant Bt848 and related family of video decoder chips, collectively referred to as the "Bt8x8" chipset. You can probably see the Bt8x8 chip (it's usually labelled as such) embedded on your TV card upon inspection, in addition to other chips which you should probably make note of before installation in case there are problems later. The "Bt" stands for Brooktree, after the original manufacturer of the chipset, now a part of Conexant. The Bt8x8 family has enjoyed remarkable longevity in a world where Moore's Law is the rule, the first ISA boards manufactured in the mid−1990s. There are several chips in this family, including the Bt848, Bt848A, Bt849, Bt878 and Bt879, and as a rule are all supported by the BTTV driver for which this document is named.

In addition to the Bt8x8 decoder chip, these cards vary by accompanying components such as the tuner and sound decoder, and may include an optional videotext decoder, radio tuner, and/or hardware mpeg encoder.

Note that the next generation of bt8x8, the Conexant 2388x, is now supported by a driver in the Linux 2.6 kernel. The configuration of hardware with that chipset is beyond the scope of this document (but similar).

In general, any PCI card with a Bt8x8 chipset should work with the Linux Bttv driver. TV cards known NOT to work include the following:

- Cards with a Zoran 36057/36067 PCI controller chipset, which are instead supported by this driver, and includes the following models:
    - Iomega Buz
    - Pinnacle DC10+
    - Linux Media Labs LML33
- Cards with a Philips SAA7130/7134 controller
- Multimedia eXtension Board cards, manufactured by Siemens−Nixdorf
- Hexium HV−PCI6, Orion or Gemini framegrabber cards
- Any ISA−based TV card

If you are uncertain which chipset your TV card has, use the **lspci** command. An example of such output for a Bt8x8 card might look similar to the following:

```
0000:02:0a.0 Multimedia video controller: Brooktree Corporation Bt878 Video
   Capture (rev 02)
0000:02:0a.1 Multimedia controller: Brooktree Corporation Bt878 Audio Capture
   (rev 02)
```

A list of hardware (mostly PCI cards) compatible with the Bttv driver is found in Appendix B

2.2. The Sound Output

Your card may have come with a short external audio connector with two male ends. This is for connecting your Bttv audio out to your sound card's input jack so you won't require an extra set of speakers. Some cards may also have a 4−pin socket for output of your Bt8x8 audio signals directly to your sound card within your computer case. You can connect this to your "CDROM" input with reasonable certainty that you will be able to control the input with your mixer from your primary sound card as well as record (see Appendix D for more information on recording). Alternatively you can use external speakers connected to the line out of your Bt8x8 card.

3. Enabling Support for Your Bt8x8 Hardware in Linux

3.1. The Bttv Driver

Drivers for Bt8x8−based hardware have been a part of the Linux kernel since version 2.2.0, and are likely to be already enabled in your running kernel if you have not recompiled or otherwise replaced your system's stock kernel with a custom version. If unavailable, Bt8x8 support can be enabled two ways:

- by recompiling your kernel using the source code using downloaded kernel−source from your distribution or fetched directly from the kernel source repository
- the Bttv driver can be fetched directly from the Bttv home page and then patching your available kernel source, which should only be necessary if you have a kernel version prior to 2.2.0 or later than 2.0.35; earlier versions are not likely to work.

3.1.1. Module or In−Kernel?

It is likely the stock kernel that was installed on your Linux system, if unmodified, already supports Bt8x8−based hardware. The driver will exist either as a loadable module or within the already running kernel. An easy way to tell is to use the **dmesg** command piped into **less** (for easy viewing) to look for an acknowledgement that the driver in question was loaded when your system started up:

```
$ dmesg | less
```

...which may yield something like the following, depending on your exact Bt8x8 chipset features and kernel version (in this case, 2.6):

```
Jan 26 19:40:04 localhost kernel: bttv: driver version 0.9.15 loaded
Jan 26 19:40:04 localhost kernel: bttv: using 8 buffers with 2080k
   (520 pages) each for capture
Jan 26 19:40:04 localhost kernel: bttv: Bt8xx card found (0).
Jan 26 19:40:04 localhost kernel: ACPI: PCI interrupt 0000:02:09.0[A] ->
   GSI 17 (level, low) -> IRQ 17
Jan 26 19:40:04 localhost kernel: bttv0: Bt878 (rev 2) at 0000:02:09.0,
   irq: 17, latency: 32, mmio: 0xe7000000
Jan 26 19:40:04 localhost kernel: bttv0: detected: Hauppauge WinTV
   [card=10], PCI subsystem ID is 0070:13eb
Jan 26 19:40:04 localhost kernel: bttv0: using: Hauppauge (bt878) [card=10,
   autodetected]
Jan 26 19:40:04 localhost kernel: bttv0: using tuner=2
Jan 26 19:40:04 localhost kernel: tuner: chip found at addr 0xc2 i2c-bus
   bt878 #0 [sw]
Jan 26 19:40:04 localhost kernel: tuner: type set to 2 (Philips NTSC
   (FI1236, FM1236 and compatibles)) by bt878 #0 [sw]
```

If you don't see it, the particular driver module you are interested in may be available but not necessarily loaded at that time. If you know what the module is named, try using `find`; in this example we are looking for the 'bttv' module:

```
$ find /lib/modules −name bttv.o
```

Note that up until the 2.4 series modules had the suffix `.o`; for 2.6+ series kernels this was replaced with `.ko`.

You can get a list of all modules available by typing the following at the command line:

```
$ ls -R /lib/modules/`uname -r`/kernel
```

Where **`uname –r`**, surrounded by forward tick marks, is your kernel version number. The following output is an example of what you might find in a Bttv−ready kernel, where everything is loaded as a module (edited for brevity):

```
/lib/modules/2.6.8/kernel/drivers/media/video:
 btcx-risc.ko    ir-kbd-i2c.ko  tda9875.ko  tvaudio.ko      video-buf.ko
 bttv.ko         msp3400.ko     tda9887.ko  v4l1-compat.ko  videodev.ko
 ir-kbd-gpio.ko  tda7432.ko     tuner.ko    v4l2-common.ko
```

Again, your output may vary by the currently running kernel capabilities.

Once you know which module your hardware needs you can find out if it is already loaded by typing at the command line or in a terminal window:

```
# lsmod
```

As shown by the prompt above, you will need to have root privileges to do this. You should get output similar to, but not necessarily limited to the following:

```
snd_bt87x              11400  0
tuner                  18832  0
tvaudio                20428  0
msp3400                22100  0
bttv                  145804  0
video_buf              17476  1 bttv
i2c_algo_bit            8904  1 bttv
v4l2_common             4928  1 bttv
videodev                7232  2 quickcam,bttv
```

Most stock kernels are compiled with `kmod`, which enables automatic loading of necessary modules when the appropriate hardware is detected. It may not always do so, however, so if you don't have the particular module you're seeking loaded and you think the module may be available, try loading it manually with **modprobe**, as in the following example (using the `bttv` module):

```
# modprobe -v bttv
```

3.2. No Bttv module or in−kernel support found?

If your running kernel or precompiled distribution kernel inexplicably doesn't have Bt8x8 support enabled or available, your can always acquire new kernel source code from the Linux kernel.org source code repository. If you are unfamiliar with the prerequisites and procedure of compiling your own kernel, I direct you to the Kernel HOWTO for more information.

If you do recompile, the Bttv driver itself will obviously need to be enabled, and is found in the heading entitled "Multimedia Devices" –> "Video for Linux" in the 2.4 and earlier kernels in menuconfig or xconfig, or alternatively in "Device Drivers" –> "Multimedia Devices" –> "Video for Linux" –> "BT848 Video For Linux" in the 2.6+ series.

You will need `i2c` subsystem support enabled as well as `i2c−algo−bit`.

Device support (`i2c−dev`) is not required for Bt8x8 support. Earlier than kernel version 2.3.34 i2c is not present in the kernel source and a patch must be fetched and applied to your source, found at the lm_sensors homepage.

If you are running a 2.4 series kernel, **btaudio** in the OSS "Sound" category is optional if you want to use external speakers attached to the the card's audio out jack, and either (or both) OSS or ALSA sound system btaudio drivers in the 2.6+ series.

3.3. Configuration Requirements for Use of your Bttv Hardware

Once you know your kernel is enabled you can proceed to some minor tuning that may already be done for you depending on your system and distributor and distribution features.

3.3.1. Device Files

If you are using Device Filesystem (devfs) or udev your work in this respect may be done for you dynamically, but at the same time the devices may not exist until they are recognized by the kernel (i.e., the necessary modules loaded), so be sure you have taken care of the previously outlined prerequisites first.

The Linux kernel requires a virtual device node be created to access and control a particular piece of hardware. This node may have already been created for you automatically; **ls −l /dev/video*** (with an asterisk) or alternatively **find /dev −name video*** or even visual inspection of the `/dev` directory with your favorite file manager can give you an idea if the video devices exist. If so you can proceed to Section 3.4; if not you will need to create them manually.

An easy way to create them, if available with your Linux distribution, is use of the `MAKEDEV` script, which may be located in `/dev` or the usual places for storing executable commands (`/bin`,`/sbin` and so on). The manual page for `MAKEDEV` (**man MAKEDEV**) can guide you further, but be aware of the device−specific command options. If `MAKEDEV` doesn't work or doesn't exist, or you just prefer doing things the hard way, move on to the next paragraph.

A device can be created as a block (such as a drive), a FIFO (file−in−file−out or pipe, as in xconsole) or a character device, which represents other hardware. Each device has a major and a minor number "coordinate" to tell the kernel what it is and where to access it. These numbers are not arbitrary. The major number 81 with minor number 0, 1, 2, and so on are by convention assigned to Video4linux devices, including TV tuner boards and webcams. In order to create the video device `/dev/video0`, use **mknod** at the command line:

```
# mknod /dev/video0 c 81 0
```

where **c** represents a character device.

You can use the following script, which I have borrowed from the kernel source (located in `linux/Documentation/video4linux/bttv/MAKEDEV` of the source tree):

```
#!/bin/bash
function makedev () {
     for dev in 0 1 2 3; do echo "/dev/$1$dev:
     char 81 $[ $2 + $dev ]" rm −f /dev/$1$dev
     mknod /dev/$1$dev c 81 $[ $2 + $dev ] chmod
     666 /dev/$1$dev
     done

     # symlink for default device
     rm −f /dev/$1 ln −s /dev/${1}0 /dev/$1
     }
```

```
# see http://roadrunner.swansea.uk.linux.org/v4lapi.shtml
echo "*** new device names ***" makedev video
0 makedev radio 64 makedev vtx 192 makedev vbi 224
# "*** old device names (for compatibility only) ***"
#makedev bttv 0 #makedev bttv-fm 64 #makedev bttv-vbi 224
```

Simply copy and paste the above into your favorite editing program, save it as MAKEDEV or whatever name you like, make it executable (i.e., **chmod u+x MAKEDEV**), and then execute it as root:

```
# ./MAKEDEV
```

3.4. Groups and Permissions

It is a good idea to be sure that your user account can access the device once all modules are loaded and device nodes created. The most security−conscious way to do that is to add access for a particular group. On my system, the members of the group 'video' are allowed to use the webcam, scanner and other photographic devices. The way to accomplish this is to first change the ownership of the devices in `/dev` like so (as root):

```
# chown root.video /dev/usb/video*
```

...where **root.video** are the owner and group the device will now belong to. Obviously, the specific command will vary by your system and the type of device. It is important that you change the ownership of the device node itself and not the symlink; symlinks' ownerships are affected only by changing the parent devices or files they point to.

To see if your user account is a member of the group in question, as root issue the following command:

```
# grep -e video /etc/group
```

You should see something like the following:

```
video:x:44:
```

...where '44' is the group number. Since no members follow the last colon in the 'video' group, we can add them, let's say user 'jhs' with the command

```
# adduser jhs  video
```

After this, it's simply a matter of allowing read and write access for the user in question of the device like so:

```
# chmod g+rw /dev/v4l/video0
```

...where **g+rw** means add **r**ead and **w**rite access for **g**roup. See the documentation for chmod (**man chmod** or **info chmod**) for further info.

4. Loading the Modules

This section is only for those whose modules don't load automatically and/or correctly. For a complete list of options by module, see Appendix A.

4.1. The Bttv Module

Once your card is installed, you can load the bttv module if your kernel hasn't already done it for you. Using the **modprobe** command as root, type

```
 # modprobe bttv
```

The modules `videodev` and `i2c` may be required prior to this if you are running a pre−2.4 series kernel. By default, the **bttv** will try to autodetect your card type; you can inspect **/var/log/messages** to see what it finds. If it doesn't autodetect properly, you can add the **card=#** option to the end of the previous command to force a your particular card type, a list of which are found in Appendix B or on your system in your kernel source Documentation if installed in the usual place (`/usr/src/linux`. If you get in trouble and need to remove the module, you can use **rmmod**:

```
 $ rmmod bttv
```

You can then reload the module with the appropriate options.

4.2. The Tuner Module

If necessary, load the tuner module, with

```
 # modprobe tuner
```

If the tuner is not correctly identified you may need to supply the magic number for tuner−type:

```
 # modprobe tuner type=#
```

You may need to dig into your case to see which tuner you have if you can't find the maker and model in the printed specifications that came with your hardware, or if this information is otherwise unavailable. It should be marked with the brand name and may support one or more of the three major broadcast standards in use in the world, whether NTSC, PAL or SECAM. In general, chipsets manufactured for the US market are NTSC; for Europe, PAL, and Asia PAL or SECAM. Some countries support more than one standard.

Once you have identified your tuner, select the value of **n** from the following list:

```
 tuner=n        type of tuner chip
-------------------------------------------------------------

tuner=0      Temic PAL (4002 FH5)
tuner=1      Philips PAL_I (FI1246 and compatibles)
tuner=2      Philips NTSC (FI1236,FM1236 and compatibles)
tuner=3      Philips (SECAM+PAL_BG) (FI1216MF, FM1216MF, FR1216MF)
tuner=4      NoTuner
tuner=5      Philips PAL_BG (FI1216 and compatibles)
tuner=6      Temic NTSC (4032 FY5)
tuner=7      Temic PAL_I (4062 FY5)
tuner=8      Temic NTSC (4036 FY5)
tuner=9      Alps HSBH1
```

```
tuner=10    Alps TSBE1
tuner=11    Alps TSBB5
tuner=12    Alps TSBE5
tuner=13    Alps TSBC5
tuner=14    Temic PAL_BG (4006FH5)
tuner=15    Alps TSCH6
tuner=16    Temic PAL_DK (4016 FY5)
tuner=17    Philips NTSC_M (MK2)
tuner=18    Temic PAL_I (4066 FY5)
tuner=19    Temic PAL* auto (4006 FN5)
tuner=20    Temic PAL_BG (4009 FR5) or PAL_I (4069 FR5)
tuner=21    Temic NTSC (4039 FR5)
tuner=22    Temic PAL/SECAM multi (4046 FM5)
tuner=23    Philips PAL_DK (FI1256 and compatibles)
tuner=24    Philips PAL/SECAM multi (FQ1216ME)
tuner=25    LG PAL_I+FM (TAPC-I001D)
tuner=26    LG PAL_I (TAPC-I701D)
tuner=27    LG NTSC+FM (TPI8NSR01F)
tuner=28    LG PAL_BG+FM (TPI8PSB01D)
tuner=29    LG PAL_BG (TPI8PSB11D)
tuner=30    Temic PAL* auto + FM (4009 FN5)
tuner=31    SHARP NTSC_JP (2U5JF5540)
tuner=32    Samsung PAL TCPM9091PD27
tuner=33    MT20xx universal
tuner=34    Temic PAL_BG (4106 FH5)
tuner=35    Temic PAL_DK/SECAM_L (4012 FY5)
tuner=36    Temic NTSC (4136 FY5)
tuner=37    LG PAL (newer TAPC series)
tuner=38    Philips PAL/SECAM multi (FM1216ME MK3)
tuner=39    LG NTSC (newer TAPC series)
tuner=40    HITACHI V7-J180AT
tuner=41    Philips PAL_MK (FI1216 MK)
tuner=42    Philips 1236D ATSC/NTSC
tuner=43    Philips NTSC MK3 (FM1236MK3 or FM1236/F)
tuner=44    Philips 4 in 1 (ATI TV Wonder Pro/Conexant)
tuner=45    Microtune 4049 FM5
```

4.3. Other Modules

Don't forget to load any other modules you may need, including **btaudio** if you plan on recording or capturing audio to another application.

4.4. Automating the Module Loading Process

After you know which modules and options you need, you can automate the process by putting the information into `/etc/conf.modules` or `/etc/modules.conf`, depending on your distribution. Then, running an application which needs the driver will cause it to be loaded automatically with the appropriate options. The following is an example entry:

```
# TV
alias  char-major-81    bttv
pre-install bttv        modprobe -k tuner; modprobe -k msp3400
options                 bttv               radio=1  card=3
options tuner           type=2
```

5. Television Applications

Now that your kernel is configured, your devices have been configured, and your modules are inserted, you will also need an application to actually view or capture the images from your card.

5.1. Console−Based Applications

5.1.1. FbTV

Fbtv is a console−only mode TV viewing program available for viewing on a framebuffer−video enabled system with a Bt8x8 card. If you don't know what a framebuffer is you can read the Framebuffer HOWTO. Fbtv is available from the Bttv homepage with Xawtv.

5.1.2. AATV

AATV is a simple program to watch TV on a text console under Linux using aalib and a Bt8x8 card. While the graphics are enabled in ascii graphics only, the advantage is that you (or anyone) can watch television from anywhere over the internet using your local Bt8x8 hardware.

5.2. GUI−based Applications

The following applications require a graphical user interface such as GNOME, KDE etc.

5.2.1. Xawtv

Xawtv is arguably the best−known Linux application used for viewing TV from video sources including Bt8x8 devices; most Linux distributions have packaged versions. If you're not sure of your device configuration you probably ought to start with Xawtv and the **−hwscan** option to check for suitable devices:

```
$ xawtv -hwscan
This is xawtv-3.94, running on Linux/i686 (2.6.8)
looking for available devices
port 139-139
    type : Xvideo, image scaler
    name : NV17 Video Overlay

port 140-140
    type : Xvideo, image scaler
    name : NV17 Video Texture

port 141-172
    type : Xvideo, image scaler
    name : NV05 Video Blitter

port 173-173                            [ -xvport 173 ]
    type : Xvideo, video overlay
    name : NVIDIA Video Interface Port

/dev/video0: OK                         [ -device /dev/video0 ]
    type : v4l2
    name : BT878 video (Hauppauge (bt878))
```

```
    flags: overlay capture tuner
```

Now that you know your Bt8x8 device is available, try starting Xawtv:

```
$ xawtv −device /dev/video0
```

Note that some Nvidia cards may confuse xawtv, so if you have one of these be sure to use the **−device** switch as above.

5.2.2. Motv

Motv is a Motif−based rewrite of Xawtv. Other than a more attractive interface, and is also found at the Xawtv homepage. It is otherwise identical to Xawtv.

5.2.3. TVtime

TVtime is the ultimate application for those who want to watch TV using an application that doesn't get in the way and requires little or no configuration 'out of the box.' The homepage can be found at the sourceforge TVtime homepage.

A. Optional Arguments for Loading Modules

videodev.o

This is the basic video4linux module, all video
drivers (incl. bttv) register themselves here.

i2c.o

The generic i2c module. It does much of the i2c bus
management, all other modules (except videodev.o)
use this one.

modprobe args:
scan=1 scan the bus for i2c devices
verbose=0 shut up i2c
i2c_debug=1 for debugging, it sticks the
whole (software) i2c bus traffic to the syslog

bttv.o

The bt848 (grabber chip) driver.

modprobe args:
remap=adr remap Bt848 memory to address less than 20
vidmem=base frame buffer address over 20 (of
graphic card)
triton1=0/1 for Triton1 compatibility; Triton1 is
automatically recognized but this might also help with other chipsets
pll=0/1/2 pll settings (**0**: don't use PLL; **1**: 28 MHz crystal installed
2: 35 MHz crystal installed
radio=0/1 card supports radio
card=*n* card type: see the next section for the complete list;
remap, card, radio and pll accept up to four comma-separated arguments
(for multiple boards). The CARD and PLL defines from the Makefile
are used as defaults.

msp3400.o

The driver for the msp34xx sound processor chips. If you have a

```
   stereo card, you probably want to modprobe this one.

   modprobe args:
      debug=1/2  print some debug info to the syslog, 2 is more verbose.
```

***tea6300.o**

```
-----------------------------

   The driver for the tea6300 fader chip.  If you have a stereo
   card and the msp3400.o doesn't work, you might want to try this
   one.  This chip is seen on most STB TV/FM cards (usually from
   Gateway OEM sold surplus on auction sites).

   modprobe args:
      debug=1  print some debug info to the syslog.
```

***tda8425.o**

```
-----------------------------

   The driver for the tda8425 fader chip.  This driver used to be
   part of bttv.c, so if your sound used to work but does not
   anymore, try loading this module.

   modprobe args:
      debug=1  print some debug info to the syslog.
```

***tda9855.o**

```
-----------------------------

   The driver for the tda9855 stereo decoder / audio processor chip.

   modprobe args:
      debug=1  print some debug info to the syslog.
```

***dpl3518.o**

```
-----------------------------

   Driver for the dpl3518a Dolby Pro Logic Processor.

   modprobe args:
      debug=1  print some debug info to the syslog.
```

tuner.o
```
--------------------------

   The tuner driver.  You need this unless you want to use only
   with a camera or external tuner.

   modprobe args:
      debug=1  print some debug info to the syslog
      type=n type of the tuner chip. n as seen in Section 4
```

i2c_chardev.o
```
--------------------------------

   Provides a character device for i2c bus access.  Works for 2.1.x
   only, not compiled by default.
```

B. Bt8x8 Cards by Number

These are the option numbers for cards for use with **modprobe**.This does not boast to be a complete list by any means; it is copied nearly verbatim from the kernel source documentation for bttv. If your card is not listed it may or may not be supported depending on the chipset and accompanying components with which it is constructed.

```
 card=n         card type
--------------------------------------------------------

 card=0      UNKNOWN/GENERIC
 card=1      MIRO PCTV
 card=2      Hauppauge (bt848)
 card=3      STB, Gateway P/N 6000699 (bt848)
 card=4      Intel Create and Share PCI/ Smart Video Recorder III
 card=5      Diamond DTV2000
 card=6      AVerMedia TVPhone
 card=7      MATRIX-Vision MV-Delta
 card=8      Lifeview FlyVideo II (Bt848) LR26 / MAXI TV Video PCI2 LR26
 card=9      IMS/IXmicro TurboTV
 card=10     Hauppauge (bt878)
 card=11     MIRO PCTV pro
 card=12     ADS Technologies Channel Surfer TV (bt848)
 card=13     AVerMedia TVCapture 98
 card=14     Aimslab Video Highway Xtreme (VHX)
 card=15     Zoltrix TV-Max
 card=16     Prolink Pixelview PlayTV (bt878)
 card=17     Leadtek WinView 601
 card=18     AVEC Intercapture
 card=19     Lifeview FlyVideo II EZ /FlyKit LR38 Bt848 (capture only)
 card=20     CEI Raffles Card
 card=21     Lifeview FlyVideo 98/ Lucky Star Image World ConferenceTV LR50
 card=22     Askey CPH050/ Phoebe Tv Master + FM
 card=23     Modular Technology MM201/MM202/MM205/MM210/MM215 PCTV, bt878
 card=24     Askey CPH05X/06X (bt878) [many vendors]
 card=25     Terratec TerraTV+ Version 1.0 (Bt848)/ Terra TValue Version 1.0/ Vobis TV-Boostar
 card=26     Hauppauge WinCam newer (bt878)
 card=27     Lifeview FlyVideo 98/ MAXI TV Video PCI2 LR50
 card=28     Terratec TerraTV+ Version 1.1 (bt878)
 card=29     Imagenation PXC200
 card=30     Lifeview FlyVideo 98 LR50
 card=31     Formac iProTV, Formac ProTV I (bt848)
 card=32     Intel Create and Share PCI/ Smart Video Recorder III
 card=33     Terratec TerraTValue Version Bt878
 card=34     Leadtek WinFast 2000/ WinFast 2000 XP
 card=35     Lifeview FlyVideo 98 LR50 / Chronos Video Shuttle II
 card=36     Lifeview FlyVideo 98FM LR50 / Typhoon TView TV/FM Tuner
 card=37     Prolink PixelView PlayTV pro
 card=38     Askey CPH06X TView99
 card=39     Pinnacle PCTV Studio/Rave
```

card=40	STB TV PCI FM, Gateway P/N 6000704 (bt878), 3Dfx VoodooTV 100
card=41	AVerMedia TVPhone 98
card=42	ProVideo PV951
card=43	Little OnAir TV
card=44	Sigma TVII-FM
card=45	MATRIX-Vision MV-Delta 2
card=46	Zoltrix Genie TV/FM
card=47	Terratec TV/Radio+
card=48	Askey CPH03x/ Dynalink Magic TView
card=49	IODATA GV-BCTV3/PCI
card=50	Prolink PV-BT878P+4E / PixelView PlayTV PAK / Lenco MXTV-9578 CP
card=51	Eagle Wireless Capricorn2 (bt878A)
card=52	Pinnacle PCTV Studio Pro
card=53	Typhoon TView RDS + FM Stereo / KNC1 TV Station RDS
card=54	Lifeview FlyVideo 2000 /FlyVideo A2/ Lifetec LT 9415 TV [LR90]
card=55	Askey CPH031/ BESTBUY Easy TV
card=56	Lifeview FlyVideo 98FM LR50
card=57	GrandTec 'Grand Video Capture' (Bt848)
card=58	Askey CPH060/ Phoebe TV Master Only (No FM)
card=59	Askey CPH03x TV Capturer
card=60	Modular Technology MM100PCTV
card=61	AG Electronics GMV1
card=62	Askey CPH061/ BESTBUY Easy TV (bt878)
card=63	ATI TV-Wonder
card=64	ATI TV-Wonder VE
card=65	Lifeview FlyVideo 2000S LR90
card=66	Terratec TValueRadio
card=67	IODATA GV-BCTV4/PCI
card=68	3Dfx VoodooTV FM (Euro), VoodooTV 200 (USA)
card=69	Active Imaging AIMMS
card=70	Prolink Pixelview PV-BT878P+ (Rev.4C,8E)
card=71	Lifeview FlyVideo 98EZ (capture only) LR51
card=72	Prolink Pixelview PV-BT878P+9B (PlayTV Pro rev.9B FM+NICAM)
card=73	Sensoray 311
card=74	RemoteVision MX (RV605)
card=75	Powercolor MTV878/ MTV878R/ MTV878F
card=76	Canopus WinDVR PCI (COMPAQ Presario 3524JP, 5112JP)
card=77	GrandTec Multi Capture Card (Bt878)
card=78	Jetway TV/Capture JW-TV878-FBK, Kworld KW-TV878RF
card=79	DSP Design TCVIDEO
card=80	Hauppauge WinTV PVR
card=81	IODATA GV-BCTV5/PCI
card=82	Osprey 100/150 (878)
card=83	Osprey 100/150 (848)
card=84	Osprey 101 (848)
card=85	Osprey 101/151
card=86	Osprey 101/151 w/ svid
card=87	Osprey 200/201/250/251
card=88	Osprey 200/250
card=89	Osprey 210/220
card=90	Osprey 500

card=91	Osprey 540
card=92	Osprey 2000
card=93	IDS Eagle
card=94	Pinnacle PCTV Sat
card=95	Formac ProTV II (bt878)
card=96	MachTV
card=97	Euresys Picolo
card=98	ProVideo PV150
card=99	AD−TVK503
card=100	Hercules Smart TV Stereo
card=101	Pace TV & Radio Card
card=102	IVC−200
card=103	Grand X−Guard / Trust 814PCI
card=104	Nebula Electronics DigiTV
card=105	ProVideo PV143
card=106	PHYTEC VD−009−X1 MiniDIN (bt878)
card=107	PHYTEC VD−009−X1 Combi (bt878)
card=108	PHYTEC VD−009 MiniDIN (bt878)
card=109	PHYTEC VD−009 Combi (bt878)
card=110	IVC−100
card=111	IVC−120G
card=112	pcHDTV HD−2000 TV
card=113	Twinhan DST + clones
card=114	Winfast VC100
card=115	Teppro TEV−560/InterVision IV−560
card=116	SIMUS GVC1100
card=117	NGS NGSTV+
card=118	LMLBT4
card=119	Tekram M205 PRO
card=120	Conceptronic CONTVFMi

C. Cards and Features by Manufacturer

```
MATRIX Vision
-------------

MV-Delta
- Bt848A
- 4 Composite inputs, 1 S-VHS input (shared with 4th composite)
- EEPROM

http://www.matrix-vision.de/

This card has no tuner but supports all 4 composite (1 shared with an
S-VHS input) of the Bt848A.
Very nice card if you only have satellite TV but several tuners connected
to the card via composite.

Many thanks to Matrix-Vision for giving us 2 cards for free which made
Bt848a/Bt849 single crystal operation support possible!!!



Miro/Pinnacle PCTV
------------------

- Bt848
  some (all??) come with 2 crystals for PAL/SECAM and NTSC
- PAL, SECAM or NTSC TV tuner (Philips or TEMIC)
- MSP34xx sound decoder on add on board
  decoder is supported but AFAIK does not yet work
  (other sound MUX setting in GPIO port needed??? somebody who fixed this???)
- 1 tuner, 1 composite and 1 S-VHS input
- tuner type is autodetected

http://www.miro.de/
http://www.miro.com/


Many thanks for the free card which made first NTSC support possible back
in 1997!


Hauppauge Win/TV pci
--------------------

There are many different versions of the Hauppauge cards with different
tuners (TV+Radio ...), teletext decoders.
Note that even cards with same model numbers have (depending on the revision)
different chips on it.
```

```
- Bt848 (and others but always in 2 crystal operation???)
  newer cards have a Bt878
- PAL, SECAM, NTSC or tuner with or without Radio support

e.g.:
  PAL:
  TDA5737: VHF, hyperband and UHF mixer/oscillator for TV and VCR 3-band tuners
  TSA5522: 1.4 GHz I2C-bus controlled synthesizer, I2C 0xc2-0xc3

  NTSC:
  TDA5731: VHF, hyperband and UHF mixer/oscillator for TV and VCR 3-band tuners
  TSA5518: no datasheet available on Philips site
- Philips SAA5246 or SAA5284 ( or no) Teletext decoder chip
  with buffer RAM (e.g. Winbond W24257AS-35: 32Kx8 CMOS static RAM)
  SAA5246 (I2C 0x22) is supported
- 256 bytes EEPROM: Microchip 24LC02B or Philips 8582E2Y
  with configuration information
  I2C address 0xa0 (24LC02B also responds to 0xa2-0xaf)
- 1 tuner, 1 composite and (depending on model) 1 S-VHS input
- 14052B: mux for selection of sound source
- sound decoder: TDA9800, MSP34xx (stereo cards)


Askey CPH-Series
----------------
Developed by TelSignal(?), OEMed by many vendors (Typhoon, Anubis, Dynalink)

  Card series:
    CPH01x: BT848 capture only
    CPH03x: BT848
    CPH05x: BT878 with FM
    CPH06x: BT878 (w/o FM)f/
    CPH07x: BT878 capture only

  TV standards:
     CPH0x0: NTSC-M/M
     CPH0x1: PAL-B/G
     CPH0x2: PAL-I/I
     CPH0x3: PAL-D/K
     CPH0x4: SECAM-L/L
     CPH0x5: SECAM-B/G
     CPH0x6: SECAM-D/K
     CPH0x7: PAL-N/N
     CPH0x8: PAL-B/H
     CPH0x9: PAL-M/M

  CPH03x was often sold as "TV capturer".

  Identifying:
  1) 878 cards can be identified by PCI Subsystem-ID:
      144f:3000 = CPH06x
```

```
    144F:3002 = CPH05x w/ FM
    144F:3005 = CPH06x_LC (w/o remote control)
1) The cards have a sticker with "CPH"-model on the back.
2) These cards have a number printed on the PCB just above the tuner metal box:
    "80-CP2000300-x" = CPH03X
    "80-CP2000500-x" = CPH05X
    "80-CP2000600-x" = CPH06X / CPH06x_LC

Askey sells these cards as "Magic TView series", Brand "MagicXpress".
Other OEM often call these "Tview", "TView99" or else.

Lifeview Flyvideo Series:
-------------------------
  The naming of these series differs in time and space.

  Identifying:
  1) Some models can be identified by PCI subsystem ID:
      1852:1852 = Flyvideo 98 FM
      1851:1850 = Flyvideo 98
      1851:1851 = Flyvideo 98 EZ (capture only)
  2) There is a print on the PCB:
      LR25       = Flyvideo (Zoran ZR36120, SAA7110A)
      LR26 Rev.N = Flyvideo II (Bt848)
           Rev.O = Flyvideo II (Bt878)
      LR37 Rev.C = Flyvideo EZ (Capture only, ZR36120 + SAA7110)
      LR38 Rev.A1= Flyvideo II EZ (Bt848 capture only)
      LR50 Rev.Q = Flyvideo 98 (w/eeprom and PCI subsystem ID)
           Rev.W = Flyvideo 98 (no eeprom)
      LR51 Rev.E = Flyvideo 98 EZ (capture only)
      LR90       = Flyvideo 2000 (Bt878)
   Flyvideo 2000S (Bt878) w/Stereo TV (Package incl. LR91 daughterboard)
      LR91       = Stereo daughter card for LR90
      LR97       = Flyvideo DVBS
      LR99 Rev.E = Low profile card for OEM integration (only internal audio!) bt878
      LR136  = Flyvideo 2100/3100 (Low profile, SAA7130/SAA7134)
      LR137      = Flyvideo DV2000/DV3000 (SAA7130/SAA7134 + IEEE1394)
      LR138 Rev.C= Flyvideo 2000 (SAA7130)
        or Flyvideo 3000 (SAA7134) w/Stereo TV
   These exist in variations w/FM and w/Remote sometimes denoted
   by suffixes "FM" and "R".

      Lifeview.com.tw states (Feb. 2002):
      "The FlyVideo2000 and FlyVideo2000s product name have renamed to FlyVideo98."
      Their Bt8x8 cards are listed as discontinued.
      Flyvideo 2000S was probably sold as Flyvideo 3000 in some countries(Europe?).
      The new Flyvideo 2000/3000 are SAA7130/SAA7134 based.

  "Flyvideo II" had been the name for the 848 cards, nowadays (in Germany)
  this name is re-used for LR50 Rev.W.
  The Lifeview website mentioned Flyvideo III at some time, but such a card
  has not yet been seen (perhaps it was the German name for LR90 [stereo]).
```

```
  These cards are sold by many OEMs too.

  FlyVideo A2 (Elta 8680)= LR90 Rev.F (w/Remote, w/o FM, stereo TV by tda9821) {Germany}
  Lifeview 3000 (Elta 8681) as sold by Plus(April 2002), Germany = LR138 w/ saa7134


Typhoon TV card series:
-----------------------
  These can be CPH, Flyvideo, Pixelview or KNC1 series.
  Typhoon is the brand of Anubis.
  Model 50680 got re-used, some model no. had different contents over time.

  Models:
  50680 "TV Tuner PCI Pal BG"(old,red package)=can be CPH03x(bt848) or CPH06x(bt878)
  50680 "TV Tuner Pal BG" (blue package)= Pixelview PV-BT878P+ (Rev 9B)
  50681 "TV Tuner PCI Pal I" (variant of 50680)
  50682 "TView TV/FM Tuner Pal BG"       = Flyvideo 98FM (LR50 Rev.Q)
         Note: The package has a picture of CPH05x (which would be a real TView)
  50683 "TV Tuner PCI SECAM" (variant of 50680)
  50684 "TV Tuner Pal BG"                = Pixelview 878TV(Rev.3D)
  50686 "TV Tuner"                       = KNC1 TV Station
  50687 "TV Tuner stereo"                = KNC1 TV Station pro
  50688 "TV Tuner RDS" (black package)   = KNC1 TV Station RDS
  50689  TV SAT DVB-S CARD CI PCI (SAA7146AH, SU1278?) = "KNC1 TV Station DVB-S"
  50692 "TV/FM Tuner" (small PCB)
  50694  TV TUNER CARD RDS (PHILIPS CHIPSET SAA7134HL)
  50696  TV TUNER STEREO (PHILIPS CHIPSET SAA7134HL, MK3ME Tuner)
  50804  PC-SAT TV/Audio Karte = Techni-PC-Sat (ZORAN 36120PQC, Tuner:Alps)
  50866  TVIEW SAT RECEIVER+ADR
  50868 "TV/FM Tuner Pal I" (variant of 50682)
  50999 "TV/FM Tuner Secam" (variant of 50682)


Guillemot
---------
  Maxi-TV PCI (ZR36120)
  Maxi TV Video 2 = LR50 Rev.Q (FI1216MF, PAL BG+SECAM)
  Maxi TV Video 3 = CPH064 (PAL BG + SECAM)

Mentor
------
  Mentor TV card ("55-878TV-U1") = Pixelview 878TV(Rev.3F) (w/FM w/Remote)

Prolink
-------
   TV cards:
   PixelView Play TV pro - (Model: PV-BT878P+ REV 8E)
   PixelView Play TV pro - (Model: PV-BT878P+ REV 9D)
   PixelView Play TV pro - (Model: PV-BT878P+ REV 4C / 8D / 10A )
   PixelView Play TV - (Model: PV-BT848P+)
   878TV - (Model: PV-BT878TV)
```

```
   Multimedia TV packages (card + software pack):
   PixelView Play TV Theater - (Model: PV-M4200) =  PixelView Play TV pro + Software
   PixelView Play TV PAK -     (Model: PV-BT878P+ REV 4E)
   PixelView Play TV/VCR -     (Model: PV-M3200 REV 4C / 8D / 10A )
   PixelView Studio PAK -      (Model:    M2200 REV 4C / 8D / 10A )
   PixelView PowerStudio PAK - (Model: PV-M3600 REV 4E)
   PixelView DigitalVCR PAK -  (Model: PV-M2400 REV 4C / 8D / 10A )

   PixelView PlayTV PAK II (TV/FM card + usb camera)  PV-M3800
   PixelView PlayTV XP PV-M4700,PV-M4700(w/FM)
   PixelView PlayTV DVR PV-M4600  package contents:PixelView PlayTV pro, windvr & videoMail s/w

   Further Cards:
   PV-BT878P+rev.9B (Play TV Pro, opt. w/FM w/NICAM)
   PV-BT878P+rev.2F
   PV-BT878P Rev.1D (bt878, capture only)

   XCapture PV-CX881P (cx23881)
   PlayTV HD PV-CX881PL+, PV-CX881PL+(w/FM) (cx23881)

   DTV3000 PV-DTV3000P+ DVB-S CI = Twinhan VP-1030
   DTV2000 DVB-S = Twinhan VP-1020

   Video Conferencing:
   PixelView Meeting PAK - (Model: PV-BT878P)
   PixelView Meeting PAK Lite - (Model: PV-BT878P)
   PixelView Meeting PAK plus - (Model: PV-BT878P+rev 4C/8D/10A)
   PixelView Capture - (Model: PV-BT848P)

   PixelView PlayTV USB pro
   Model No. PV-NT1004+, PV-NT1004+ (w/FM) = NT1004 USB decoder chip + SAA7113 video decoder chip

Dynalink
--------
   These are CPH series.

Phoebemicro
-----------
   TV Master    = CPH030 or CPH060
   TV Master FM = CPH050

Genius/Kye
----------
   Video Wonder/Genius Internet Video Kit = LR37 Rev.C
   Video Wonder Pro II (848 or 878) = LR26

Tekram
------
   VideoCap C205 (Bt848)
   VideoCap C210 (zr36120 +Philips)
```

```
   CaptureTV M200 (ISA)
   CaptureTV M205 (Bt848)

Lucky Star
----------
   Image World Conference TV = LR50 Rev. Q

Leadtek
-------
   WinView 601 (Bt848)
   WinView 610 (Zoran)
   WinFast2000
   WinFast2000 XP

KNC One
-------
   TV-Station
   TV-Station SE (+Software Bundle)
   TV-Station pro (+TV stereo)
   TV-Station FM (+Radio)
   TV-Station RDS (+RDS)
   TV Station SAT (analog satellite)
   TV-Station DVB-S

   newer Cards have saa7134, but model name stayed the same?

Provideo
--------
  PV951 or PV-951 (also are sold as:
   Boeder TV-FM Video Capture Card
   Titanmedia Supervision TV-2400
   Provideo PV951 TF
   3DeMon PV951
   MediaForte TV-Vision PV951
   Yoko PV951
   Vivanco Tuner Card PCI Art.-Nr.: 68404
  ) now named PV-951T

  Surveillance Series
  PV-141
  PV-143
  PV-147
  PV-148 (capture only)
  PV-150
  PV-151

  TV-FM Tuner Series
  PV-951TDV (tv tuner + 1394)
  PV-951T/TF
  PV-951PT/TF
  PV-956T/TF Low Profile
```

```
  PV-911

Highscreen
----------
   TV Karte = LR50 Rev.S
   TV-Boostar = Terratec Terra TV+ Version 1.0 (Bt848, tda9821) "ceb105.pcb"

Zoltrix
-------
   Face to Face Capture (Bt848 capture only) (PCB "VP-2848")
   Face To Face TV MAX (Bt848) (PCB "VP-8482 Rev1.3")
   Genie TV (Bt878) (PCB "VP-8790 Rev 2.1")
   Genie Wonder Pro

AVerMedia
---------
   AVer FunTV Lite (ISA, AV3001 chipset)  "M101.C"
   AVerTV
   AVerTV Stereo
   AVerTV Studio (w/FM)
   AVerMedia TV98 with Remote
   AVerMedia TV/FM98 Stereo
   AVerMedia TVCAM98
   TVCapture (Bt848)
   TVPhone (Bt848)
   TVCapture98 (="AVerMedia TV98" in USA) (Bt878)
   TVPhone98 (Bt878, w/FM)

   PCB      PCI-ID      Model-Name      Eeprom  Tuner  Sound    Country
   --------------------------------------------------------------------
   M101.C   ISA !
   M108-B      Bt848                     --     FR1236  US   (2),(3)
   M1A8-A      Bt848    AVer TV-Phone           FM1216  --
   M168-T   1461:0003   AVerTV Studio   48:17   FM1216 TDA9840T  D    (1) w/FM w/Remote
   M168-U   1461:0004   TVCapture98     40:11   FI1216   --      D    w/Remote
   M168II-B 1461:0003   Medion MD9592   48:16   FM1216 TDA9873H  D    w/FM

   (1) Daughterboard MB68-A with TDA9820T and TDA9840T
   (2) Sony NE41S soldered (stereo sound?)
   (3) Daughterboard M118-A w/ pic 16c54 and 4 MHz quartz

   US site has different drivers for (as of 09/2002):
   EZ Capture/InterCam PCI (BT-848 chip)
   EZ Capture/InterCam PCI (BT-878 chip)
   TV-Phone (BT-848 chip)
   TV98 (BT-848 chip)
   TV98 With Remote (BT-848 chip)
   TV98 (BT-878 chip)
   TV98 With Remote (BT-878)
   TV/FM98 (BT-878 chip)
   AVerTV
```

```
   AverTV Stereo
   AVerTV Studio

   DE hat diverse Treiber fuer diese Modelle (Stand 09/2002):
   TVPhone (848) mit Philips tuner FR12X6 (w/ FM radio)
   TVPhone (848) mit Philips tuner FM12X6 (w/ FM radio)
   TVCapture (848) w/Philips tuner FI12X6
   TVCapture (848) non-Philips tuner
   TVCapture98 (Bt878)
   TVPhone98 (Bt878)
   AVerTV und TVCapture98 w/VCR (Bt 878)
   AVerTVStudio und TVPhone98 w/VCR (Bt878)
   AVerTV GO Serie (Kein SVideo Input)
   AVerTV98 (BT-878 chip)
   AVerTV98 mit Fernbedienung (BT-878 chip)
   AVerTV/FM98 (BT-878 chip)

   VDOmate (www.averm.com.cn) = M168U ?

Aimslab
-------
   Video Highway or "Video Highway TR200" (ISA)
   Video Highway Xtreme (aka "VHX") (Bt848, FM w/ TEA5757)

IXMicro (former: IMS=Integrated Micro Solutions)
-------
   IXTV BT848 (=TurboTV)
   IXTV BT878
   IMS TurboTV (Bt848)

Lifetec/Medion/Tevion/Aldi
--------------------------
   LT9306/MD9306 = CPH061
   LT9415/MD9415 = LR90 Rev.F or Rev.G
          MD9592 = Avermedia TVphone98 (PCI_ID=1461:0003), PCB-Rev=M168II-B (w/TDA9873H)
          MD9717 = KNC One (Rev D4, saa7134, FM1216 MK2 tuner)
          MD5044 = KNC One (Rev D4, saa7134, FM1216ME MK3 tuner)

Modular Technologies (www.modulartech.com) UK
---------------------------------------------
   MM100 PCTV (Bt848)
   MM201 PCTV (Bt878, Bt832) w/ Quartzsight camera
   MM202 PCTV (Bt878, Bt832, tda9874)
   MM205 PCTV (Bt878)
   MM210 PCTV (Bt878) (Galaxy TV, Galaxymedia ?)

Terratec
--------
   Terra TV+ Version 1.0 (Bt848), "ceb105.PCB" printed on the PCB, TDA9821
   Terra TV+ Version 1.1 (Bt878), "LR74 Rev.E" printed on the PCB, TDA9821
   Terra TValueRadio,             "LR102 Rev.C" printed on the PCB
```

```
   Terra TV/Radio+ Version 1.0,    "80-CP2830100-0" TTTV3 printed on the PCB,
     "CPH010-E83" on the back, SAA6588T, TDA9873H
   Terra TValue Version BT878,     "80-CP2830110-0 TTTV4" printed on the PCB,
     "CPH011-D83" on back
   Terra TValue Version 1.0        "ceb105.PCB" (really identical to Terra TV+ Version 1.0)
   Terra TValue New Revision    "LR102 Rec.C"
   Terra Active Radio Upgrade (tea5757h, saa6588t)

   LR74 is a newer PCB revision of ceb105 (both incl. connector for Active Radio Upgrade)

   Cinergy 400 (saa7134), "E877 11(S)", "PM820092D" printed on PCB
   Cinergy 600 (saa7134)

Technisat
---------
   Discos ADR PC-Karte ISA (no TV!)
   Discos ADR PC-Karte PCI (probably no TV?)
   Techni-PC-Sat (Sat. analog)
         Rev 1.2 (zr36120, vpx3220, stv0030, saa5246, BSJE3-494A)
   Mediafocus I (zr36120/zr36125, drp3510, Sat. analog + ADR Radio)
   Mediafocus II (saa7146, Sat. analog)
         SatADR Rev 2.1 (saa7146a, saa7113h, stv0056a, msp3400c, drp3510a, BSKE3-307A)
   SkyStar 1 DVB  (AV7110) = Technotrend Premium
   SkyStar 2 DVB  (B2C2) (=Sky2PC)

Siemens
-------
   Multimedia eXtension Board (MXB) (SAA7146, SAA7111)

Stradis
-------
   SDM275,SDM250,SDM026,SDM025 (SAA7146, IBMMPEG2): MPEG2 decoder only

Powercolor
----------
   MTV878
       Package comes with different contents:
       a) pcb "MTV878" (CARD=75)
       b) Pixelview Rev. 4_
   MTV878R w/Remote Control
   MTV878F w/Remote Control w/FM radio

Pinnacle
--------
   Mirovideo PCTV (Bt848)
   Mirovideo PCTV SE (Bt848)
   Mirovideo PCTV Pro (Bt848 + Daughterboard for TV Stereo and FM)
   Studio PCTV Rave (Bt848 Version = Mirovideo PCTV)
   Studio PCTV Rave (Bt878 package w/o infrared)
   Studio PCTV      (Bt878)
   Studio PCTV Pro  (Bt878 stereo w/ FM)
```

```
   Pinnacle PCTV    (Bt878, MT2032)
   Pinnacle PCTV Pro (Bt878, MT2032)
   Pinncale PCTV Sat (bt878a, HM1821/1221) ["Conexant CX24110 with CX24108 tuner, aka HM1221/HM1811"]
   Pinnacle PCTV Sat XE

   M(J)PEG capture and playback:
   DC1+ (ISA)
   DC10  (zr36057,     zr36060,      saa7110, adv7176)
   DC10+ (zr36067,     zr36060,      saa7110, adv7176)
   DC20  (ql16x24b,zr36050, zr36016, saa7110, saa7187 ...)
   DC30  (zr36057, zr36050, zr36016, vpx3220, adv7176, ad1843, tea6415, miro FST97A1)
   DC30+ (zr36067, zr36050, zr36016, vpx3220, adv7176)
   DC50  (zr36067, zr36050, zr36016, saa7112, adv7176 (2 pcs.?), ad1843, miro FST97A1, Lattice ???)

Lenco
-----
   MXR-9565 (=Technisat Mediafocus?)
   MXR-9571 (Bt848) (=CPH031?)
   MXR-9575
   MXR-9577 (Bt878) (=Prolink 878TV Rev.3x)
   MXTV-9578CP (Bt878) (= Prolink PV-BT878P+4E)

Iomega
------
   Buz (zr36067, zr36060, saa7111, saa7185)

LML
---
   LML33 (zr36067, zr36060, bt819, bt856)

Grandtec
--------
   Grand Video Capture (Bt848)
   Multi Capture Card  (Bt878)

Koutech
-------
   KW-606 (Bt848)
   KW-607 (Bt848 capture only)
   KW-606RSF
   KW-607A (capture only)
   KW-608 (Zoran capture only)

IODATA (jp)
------
   GV-BCTV/PCI
   GV-BCTV2/PCI
   GV-BCTV3/PCI
   GV-BCTV4/PCI
   GV-VCP/PCI (capture only)
   GV-VCP2/PCI (capture only)
```

```
Canopus (jp)
-------
   WinDVR = Kworld "KW-TVL878RF"

www.sigmacom.co.kr
------------------
   Sigma Cyber TV II

www.sasem.co.kr
---------------
   Litte OnAir TV

hama
----
   TV/Radio-Tuner Card, PCI (Model 44677) = CPH051

Sigma Designs
-------------
   Hollywood plus (em8300, em9010, adv7175), (PCB "M340-10") MPEG DVD decoder

Formac
------
   iProTV (Card for iMac Mezzanine slot, Bt848+SCSI)
   ProTV (Bt848)
   ProTV II = ProTV Stereo (Bt878) ["stereo" means FM stereo, tv is still mono]

ATI
---
   TV-Wonder
   TV-Wonder VE

Diamond Multimedia
------------------
   DTV2000 (Bt848, tda9875)

Aopen
-----
   VA1000 Plus (w/ Stereo)
   VA1000 Lite
   VA1000 (=LR90)

Intel
-----
   Smart Video Recorder (ISA full-length)
   Smart Video Recorder pro (ISA half-length)
   Smart Video Recorder III (Bt848)

STB
---
   STB Gateway 6000704 (bt878)
```

```
   STB Gateway 6000699 (bt848)
   STB Gateway 6000402 (bt848)
   STB TV130 PCI

Videologic
----------
   Captivator Pro/TV (ISA?)
   Captivator PCI/VC (Bt848 bundled with camera) (capture only)

Technotrend
------------
   TT-SAT PCI (PCB "Sat-PCI Rev.:1.3.1"; zr36125, vpx3225d, stc0056a, Tuner:BSKE6-155A
   TT-DVB-Sat
    revisions 1.1, 1.3, 1.5, 1.6 and 2.1
    This card is sold as OEM from:
Siemens DVB-s Card
Hauppauge WinTV DVB-S
Technisat SkyStar 1 DVB
Galaxis DVB Sat
    Now this card is called TT-PCline Premium Family
   TT-Budget (saa7146, bsru6-701a)
    This card is sold as OEM from:
Hauppauge WinTV Nova
Satelco Standard PCI (DVB-S)
   TT-DVB-C PCI

Teles
-----
   DVB-s (Rev. 2.2, BSRV2-301A, data only?)

Remote Vision
-------------
   MX RV605 (Bt848 capture only)

Boeder
------
   PC ChatCam (Model 68252) (Bt848 capture only)
   Tv/Fm Capture Card  (Model 68404) = PV951

Media-Surfer  (esc-kathrein.de)
-------------------------------
   Sat-Surfer (ISA)
   Sat-Surfer PCI = Techni-PC-Sat
   Cable-Surfer 1
   Cable-Surfer 2
   Cable-Surfer PCI (zr36120)
   Audio-Surfer (ISA Radio card)

Jetway (www.jetway.com.tw)
--------------------------
   JW-TV 878M
```

```
   JW-TV 878  = KWorld KW-TV878RF

Galaxis
-------
   Galaxis DVB Card S CI
   Galaxis DVB Card C CI
   Galaxis DVB Card S
   Galaxis DVB Card C
   Galaxis plug.in S [neuer Name: Galaxis DVB Card S CI

Hauppauge
---------
   many many WinTV models ...
   WinTV DVBs = Technotrend Premium 1.3
   WinTV NOVA = Technotrend Budget 1.1 "S-DVB DATA"
   WinTV NOVA-CI "SDVBACI"
   WinTV Nova USB (=Technotrend USB 1.0)
   WinTV-Nexus-s (=Technotrend Premium 2.1 or 2.2)
   WinTV PVR
   WinTV PVR 250
   WinTV PVR 450

  US models
  990 WinTV-PVR-350 (249USD) (iTVC15 chipset + radio)
  980 WinTV-PVR-250 (149USD) (iTVC15 chipset)
  880 WinTV-PVR-PCI (199USD) (KFIR chipset + bt878)
  881 WinTV-PVR-USB
  190 WinTV-GO
  191 WinTV-GO-FM
  404 WinTV
  401 WinTV-radio
  495 WinTV-Theater
  602 WinTV-USB
  621 WinTV-USB-FM
  600 USB-Live
  698 WinTV-HD
  697 WinTV-D
  564 WinTV-Nexus-S

  Deutsche Modelle
  603 WinTV GO
  719 WinTV Primio-FM
  718 WinTV PCI-FM
  497 WinTV Theater
  569 WinTV USB
  568 WinTV USB-FM
  882 WinTV PVR
  981 WinTV PVR 250
  891 WinTV-PVR-USB
  541 WinTV Nova
  488 WinTV Nova-Ci
```

```
564 WinTV-Nexus-s
727 WinTV-DVB-c
545 Common Interface
898 WinTV-Nova-USB

UK models
607 WinTV Go
693,793 WinTV Primio FM
647,747 WinTV PCI FM
498 WinTV Theater
883 WinTV PVR
893 WinTV PVR USB  (Duplicate entry)
566 WinTV USB (UK)
573 WinTV USB FM
429 Impact VCB (bt848)
600 USB Live (Video-In 1x Comp, 1xSVHS)
542 WinTV Nova
717 WinTV DVB-S
909 Nova-t PCI
893 Nova-t USB   (Duplicate entry)
802 MyTV
804 MyView
809 MyVideo
872 MyTV2Go FM


546 WinTV Nova-S CI
543 WinTV Nova
907 Nova-S USB
908 Nova-T USB
717 WinTV Nexus-S
157 DEC3000-s Standalone + USB

Spain
685 WinTV-Go
690 WinTV-PrimioFM
416 WinTV-PCI Nicam Estereo
677 WinTV-PCI-FM
699 WinTV-Theater
683 WinTV-USB
678 WinTV-USB-FM
983 WinTV-PVR-250
883 WinTV-PVR-PCI
993 WinTV-PVR-350
893 WinTV-PVR-USB
728 WinTV-DVB-C PCI
832 MyTV2Go
869 MyTV2Go-FM
805 MyVideo (USB)
```

```
Matrix-Vision
-------------
   MATRIX-Vision MV-Delta
   MATRIX-Vision MV-Delta 2
   MVsigma-SLC (Bt848)

Conceptronic (.net)
------------
   TVCON FM,  TV card w/ FM = CPH05x
   TVCON = CPH06x

BestData
--------
   HCC100 = VCC100rev1 + camera
   VCC100 rev1 (bt848)
   VCC100 rev2 (bt878)

Gallant  (www.gallantcom.com) www.minton.com.tw
-----------------------------------------------
   Intervision IV-510 (capture only bt8x8)
   Intervision IV-550 (bt8x8)
   Intervision IV-100 (zoran)
   Intervision IV-1000 (bt8x8)

Asonic (www.asonic.com.cn) (website down)
-----------------------------------------
   SkyEye tv 878

Hoontech
--------
   878TV/FM

Teppro (www.itcteppro.com.tw)
-----------------------------
   ITC PCITV (Card Ver 1.0) "Teppro TV1/TVFM1 Card"
   ITC PCITV (Card Ver 2.0)
   ITC PCITV (Card Ver 3.0) = "PV-BT878P+ (REV.9D)"
   ITC PCITV (Card Ver 4.0)
   TEPPRO IV-550 (For BT848 Main Chip)
   ITC DSTTV (bt878, satellite)
   ITC VideoMaker (saa7146, StreamMachine sm2110, tvtuner) "PV-SM2210P+ (REV:1C)"

Kworld (www.kworld.com.tw)
--------------------------
  PC TV Station
   KWORLD KW-TV878R  TV (no radio)
   KWORLD KW-TV878RF TV (w/ radio)

   KWORLD KW-TVL878RF (low profile)

   KWORLD KW-TV713XRF (saa7134)
```

```
  MPEG TV Station (same cards as above plus WinDVR Software MPEG en/decoder)
   KWORLD KW-TV878R -Pro   TV (no Radio)
   KWORLD KW-TV878RF-Pro   TV (w/ Radio)
   KWORLD KW-TV878R -Ultra TV (no Radio)
   KWORLD KW-TV878RF-Ultra TV (w/ Radio)



JTT/ Justy Corp.http://www.justy.co.jp/ (www.jtt.com.jp website down)
---------------------------------------------------------------------
   JTT-02 (JTT TV) "TV watchmate pro" (bt848)

ADS www.adstech.com
-------------------
   Channel Surfer TV ( CHX-950 )
   Channel Surfer TV+FM ( CHX-960FM )

AVEC www.prochips.com
---------------------
   AVEC Intercapture (bt848, tea6320)

NoBrand
-------
   TV Excel = Australian Name for "PV-BT878P+ 8E" or "878TV Rev.3_"

Mach www.machspeed.com
----
   Mach TV 878

Eline www.eline-net.com/
-----
   Eline Vision TVMaster / TVMaster FM (ELV-TVM/ ELV-TVM-FM) = LR26  (bt878)
   Eline Vision TVMaster-2000 (ELV-TVM-2000, ELV-TVM-2000-FM)= LR138 (saa713x)

Spirit http://www.spiritmodems.com.au/
------
   Spirit TV Tuner/Video Capture Card (bt848)

Boser www.boser.com.tw
-----
   HS-878 Mini PCI Capture Add-on Card
   HS-879 Mini PCI 3D Audio and Capture Add-on Card (w/ ES1938 Solo-1)

Satelco www.citycom-gmbh.de, www.satelco.de
-------
   TV-FM =KNC1 saa7134
   Standard PCI (DVB-S) = Technotrend Budget
   Standard PCI (DVB-S) w/ CI
   Satelco Highend PCI (DVB-S) = Technotrend Premium
```

```
Sensoray www.sensoray.com
--------
   Sensoray 311 (PC/104 bus)
   Sensoray 611 (PCI)

CEI (Chartered Electronics Industries Pte Ltd [CEI] [FCC ID HBY])
---
  TV Tuner  -  HBY-33A-RAFFLES  Brooktree Bt848KPF + Philips
  TV Tuner MG9910  -  HBY33A-TVO  CEI + Philips SAA7110 + OKI M548262 + ST STV8438CV
  Primetime TV (ISA)
   acquired by Singapore Technologies
   now operating as Chartered Semiconductor Manufacturing
   Manufacturer of video cards is listed as:
   Cogent Electronics Industries [CEI]

AITech
------
   Wavewatcher TV (ISA)
   AITech WaveWatcher TV-PCI = can be LR26 (Bt848) or LR50 (BT878)
   WaveWatcher TVR-202 TV/FM Radio Card (ISA)

MAXRON
------
   Maxron MaxTV/FM Radio (KW-TV878-FNT) = Kworld or JW-TV878-FBK

www.ids-imaging.de
------------------
   Falcon Series (capture only)
 In USA: http://www.theimagingsource.com/
   DFG/LC1

www.sknet-web.co.jp
-------------------
   SKnet Monster TV (saa7134)

A-Max www.amaxhk.com (Colormax, Amax, Napa)
-------------------
   APAC Viewcomp 878

Cybertainment
-------------
   CyberMail AV Video Email Kit w/ PCI Capture Card (capture only)
   CyberMail Xtreme
  These are Flyvideo

VCR (http://www.vcrinc.com/)
---
  Video Catcher 16
```

```
Twinhan
-------
   DST Card/DST-IP (bt878, twinhan asic) VP-1020
    Sold as:
     KWorld DVBS Satellite TV-Card
     Powercolor DSTV Satellite Tuner Card
     Prolink Pixelview DTV2000
     Provideo PV-911 Digital Satellite TV Tuner Card With Common Interface ?
   DST-CI Card (DVB Satellite) VP-1030
   DCT Card (DVB cable)

MSI
---
    MSI TV@nywhere Tuner Card (MS-8876) (CX23881/883) Not Bt878 compatible.
    MS-8401 DVB-S

Focus www.focusinfo.com
-----
    InVideo PCI (bt878)

Sdisilk www.sdisilk.com/
-------
    SDI Silk 100
    SDI Silk 200 SDI Input Card

www.euresys.com
    PICOLO series

PMC/Pace
www.pacecom.co.uk website closed

Mercury www.kobian.com (UK and FR)
    LR50
    LR138RBG-Rx  == LR138

TEC sound (package and manuals don't have any other manufacturer info) TecSound
    Though educated Googling found: www.techmakers.com
    TV-Mate = Zoltrix VP-8482

Lorenzen www.lorenzen.de
--------
     SL DVB-S PCI = Technotrend Budget PCI (su1278 or bsru version)

Origo (.uk) www.origo2000.com
     PC TV Card = LR50

I/O Magic www.iomagic.com
---------
    PC PVR - Desktop TV Personal Video Recorder DR-PCTV100 = Pinnacle ROB2D-51009464 4.0 + Cyberlink PowerVCR II

Arowana
```

```
-------
    TV-Karte / Poso Power TV (?) = Zoltrix VP-8482 (?)

iTVC15 boards:
-------------
kuroutoshikou.com ITVC15
yuan.com MPG160 PCI TV (Internal PCI MPEG2 encoder card plus TV-tuner)

Asus www.asuscom.com
   Asus TV Tuner Card 880 NTSC (low profile, cx23880)
   Asus TV (saa7134)

Hoontech
--------
http://www.hoontech.com/korean/download/down_driver_list03.html
   HART Vision 848 (H-ART Vision 848)
   HART Vision 878 (H-Art Vision 878)
```

D. Recording Video and Sound with Bttv

In addition to the applications referenced in Section 5, recording can be managed from the command line. The issues discussed here with regard to sound capture deal only with the default kernel−2.6 and higher sound system: the Advanced Linux Sound Architecture.

The easy part is grabbing the video, for which we will use **streamer**, available with the Xawtv suite. Sound is another matter, however. You will need to access your mixer settings using **amixer**, the ALSA command−line mixer that should be available in the ALSA−tools package available from your Linux distributor. See **man amixer** to follow the command line options.

Your recording can be managed either using your primary soundcard if you have your Bt8x8 audio output connected to a mixer conduit that allows for capture (e.g. the 4−pin analog CDROM input slot), or the Bt8x8 card itself using the **btaudio** module. The following steps utilize the latter. First, identify the individual cards on your system (requires `/proc` filesystem):

```
$ cat /proc/asound/pcm
00-00: Intel ICH : NVidia CK8S : playback 1 : capture 1
00-01: Intel ICH - MIC ADC : NVidia CK8S - MIC ADC : capture 1
00-02: Intel ICH - IEC958 : NVidia CK8S - IEC958 : playback 1
01-00: Bt87x Digital : Bt87x Digital : capture 1
01-01: Bt87x Analog : Bt87x Analog : capture 1
```

The first column indicates the system numbering of your available sound devices, i.e., card 0 is the soundcard and card 01, or 1, is the Bt8x8.

Next, identify the mixer controls for the Bt8x8 card.

```
$ amixer -c 1 controls
numid=3,iface=MIXER,name='Capture Source'
numid=2,iface=MIXER,name='Capture Boost'
numid=1,iface=MIXER,name='Capture Volume'
```

Then identify the item settings of each:

```
$ amixer -c 1 cget name='Capture Source'
numid=3,iface=MIXER,name='Capture Source'
; type=ENUMERATED,access=rw---,values=1,items=3
; Item #0 'TV Tuner'
; Item #1 'FM'
; Item #2 'Mic/Line'
: values=1

$ amixer -c 1 cget name='Capture Boost'
numid=2,iface=MIXER,name='Capture Boost'
; type=BOOLEAN,access=rw---,values=1
values=on

$ amixer -c 1 cget name='Capture Volume'
numid=1,iface=MIXER,name='Capture Volume'
; type=INTEGER,access=rw---,values=1,min=0,max=15,step=0
: values=0
```

Use **cset** for the capture source:

```
$ amixer -c 1 cset name='Capture Source' 0
```

...and to set the volume:

```
$ amixer -c 1 cset name="Capture Volume' 15
```

...and you should be ready.

Now try to record something:

```
  $ streamer -p 4 -t 1:00 -r 24 -q -o test.avi -j 90 -f mjpeg -F mono16
```

...and you should be recording a sound–enabled avi file. Press [Ctrl]–C to cancel early. Next step is to automate the recording for your very own home–brewed Tivo"!

I offer the following script as an example program for automating recording; you can copy and paste it into a file and make it executable (**chmod u+x record–tv.sh**).

This script (and any recording from your Bttv device for that matter) generates extremely large files, on the order of several GB per hour, so be sure you have lots of free disk space available.

```
#!/bin/bash
# ================= record-tv.sh  ============================
# = copyright 2003 by Greg Watson  gwatsonATlinuxlogin.com   =
# = GPL2 License, minor modifications by Howard Shane        =
# = hshaneATaustin.rr.com , under same license               =
# = usage record-tv.sh prefix-filename record-time channel   =
# = Example:  ./record-tv.sh enterprise 61:00 20             =
# ============================================================
# Version 0.9
# Last Mod: Wed Feb 20 11:27 CST 2005

# Output directory
OUTPUT=$HOME/vcr
# Streamer location
STREAMER=/usr/bin/streamer
# Alsa Mixer
AMIXER=/usr/bin/amixer
# v4lctl path
V4LCTL=/usr/bin/v4lctl
# Capture Volume to ensure sound is recorded (80%)
CAPTURE_VOLUME=100

# Tvtime settings file for color/brightness/contrast values
TVTIME=$HOME/.tvtime/tvtime.xml

# End of Config
###############

# check if I'm running TV, if so just exit
if [ `ps -C tvtime | grep -c tvtime` -gt 0 ]; then
        echo "TVtime is running, aborting recording."
        exit
fi

# If the filename prefix wasn't given, set it to 'recording'
if [ -z $1 ]; then
        PREFIX="recording"
else
        PREFIX=$1
fi

# if time is blank, record for 30 minutes
if [ -z $2 ]; then
        TIME="30:00"
else
        TIME=$2
fi
```

```
if [ ! -z $3 ]; then
        $V4LCTL setchannel $3
fi

# Check for vcr dir
if [ ! -x $OUTPUT ]; then
        mkdir $OUTPUT
fi

DATE=`date +%m-%d-%Y-%H:%M`

# Set the AC97 volume to 0 (so we don't hear the sounds)
# Get mixer values first
PLAY_VOL=`$AMIXER -c 0 cget name='Master Playback Volume' | grep : | sed 's/^.*=\([^,]*\).*$/\1/'`
CAP_VOL=`$AMIXER -c 0 cget name='PCM Playback Volume' | grep : | sed 's/^.*=\([^,]*\).*$/\1/'`
#
$AMIXER -c 0 -q cset name='CD Playback Volume' 100
$AMIXER -c 0 -q cset name='Capture Volume' 1

# if tvtime.xml is set, then grab settings out of it
if [ -f $TVTIME ]; then
        CONTRAST=`cat ${TVTIME} | grep DefaultContrast | sed 's/^.*value="\([^"]*\).*$/\1/'`
        BRIGHTNESS=`cat ${TVTIME} | grep DefaultBrightness | sed 's/^.*value="\([^"]*\).*$/\1/'`
        COLOR=`cat ${TVTIME} | grep DefaultColour | sed 's/^.*value="\([^"]*\).*$/\1/'`
        HUE=`cat ${TVTIME} | grep DefaultHue | sed 's/^.*value="\([^"]*\).*$/\1/'`

        $V4LCTL bright ${BRIGHTNESS}% color ${COLOR}% contrast ${CONTRAST}% hue ${HUE}%
fi

$STREAMER -p 4 -q -t ${TIME} -r 24 -q -o ${OUTPUT}/${PREFIX}-${DATE}-${TIME}.avi -j 90 -f mjpeg -F mono16

# Sometimes streamer doesn't always re-mute audio, mute it again just to be sure
$V4LCTL volume mute on

# Restore volumes
$AMIXER -q cset name='Master Playback Volume' $PLAY_VOL
$AMIXER -q cset name='PCM Playback Volume' $CAP_VOL
#
# EOF
```

E. Enabling The FM Radio for Radio−Equipped Cards

FM radio tuners are easily enabled when inserting modules. Simply

```
  $ modprobe bttv radio=1
```

...or add a similar option to your `/etc/modules.conf` and you should be set the next time you restart or load the module. You will also need an application to access the radio. I suggest the console based **radio**, available with the Xawtv suite, or fmtools. For graphical programs, try gnomeradio or gradio or xmms with the FMRadio plug−in.

Also, you can't listen to radio at the same time as watching TV with your Bttv card (unless you have more than one card, that is).

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Version 1.2, November 2002

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