

**This guide is woefully out-of-date. I apologize for not updating this How-To in a LONG, LONG time. I will be overhauling this guide from personal experience of rebuilding a gentoo system from the ground up with the latest distribution and ivtv drivers. I cannot promise a timeframe for this, but expect something within the next few months! -ap 05/13/2005**

## MythTV and Gentoo GNU/Linux

**Disclaimer:** Note this is a guide only! I cannot guarantee that my guide will work on your particular system. This is just a reference guide created from my personal experience installing MythTV on top of Gentoo GNU/Linux. If your computer blows up, starts smoking, offers you pot, or stabs you in the chest, I am not responsible for any damages that may arise while following this guide.

Make sure the page URL is: [http://home.comcast.net/~alf\\_park/mythtv.html](http://home.comcast.net/~alf_park/mythtv.html)

### Revision History:

June 12, 2004: Fixed an omission, thanks Carl Anderson.  
June 10, 2004: Fixed some errors. Thanks Erik Hovland and Aaron Bohannon.  
June 7, 2004: Minor updates.  
May 30, 2004: Minor updates.  
May 27, 2004: Added 0.15 upgrade procedure (Appendix 3). Other updates.  
May 21, 2004: Some minor additions and helpful tips thanks to Corin Moss.  
May 5, 2004: Minor revisions. Added some SQL code to section 16.  
April 27, 2004: Added MythWeb section.  
April 3, 2004: Minor revisions and clarifications.  
March 31, 2004: Minor revisions under kernel compilation.  
March 22, 2004: Few minor revisions. Added playback commands.  
March 20, 2004: Initial version.

## Overview

**MythTV** is an open-source (GPL) project that attempts to turn a computer running GNU/Linux into a fully featured **TiVo**-like box. In addition to recording shows and having time-shifting (Live TV) capabilities, the Myth addons allow for enhanced functionality, bringing a MythTV-enabled box to much more than a TiVo could ever do: a PVR with full HTPC functionality such as DVD playback, MPEG-4 (DivX/XviD) and other video format playback, music jukebox, image viewer, emulation box, web browsing, news, and weather.

## Objectives

The impetus to writing this guide is to help fellow Linux users (especially those running Gentoo GNU/Linux) to craft a box capable of running MythTV under a **2.6 series kernel**. This guide is specifically tailored to those with a Hauppauge WinTV PVR-250/350 capture card that comes with onboard MPEG-2 encoding (and decoding with the 350). Also this guide will focus on setting up tuner cards for NTSC/M or the standard available in the United States. I will assume that the user has basic knowledge of how to set up Gentoo on his/her own machine.

## System Specs

This guide will obviously be tailored to my hardware setup. However, with proper kernel configuration, this guide may help people with differing hardware configurations. My PVR box contains:

- Athlon XP-M 2400+ (1.8Ghz clocked at 2.3Ghz)
- ABit NF7 Nforce2 motherboard
- 512MB PC3200 (DDR400) Dual-Channel (Geil 2x256)
- Gainward Geforce 4 MX440 64MB AGP8X w/ TV-Out
- Hauppauge WinTV PVR-350
- 200GB Seagate 7200.7 8MB hard drive
- 120GB Western Digital SE 8MB hard drive
- Pioneer Slot DVD-ROM
- Antec Overture Desktop Case (380w True Power)
- Serial Cable (RS-232) control over Motorola DCT-2244 Digital Cable Box

A few sidenotes: CPU is a Mobile Athlon XP. I got this so I could overclock at will using the multiplier since the CPU is unlocked. The motherboard has the Nforce Soundstorm APU with S/PDIF TOSLINK (optical) digital out, however, nVidia does not provide drivers for the APU, instead the AC97 codec is used. This is why we will use the ALSA drivers instead. I opted not to use the PVR-350's TV-out functionality since the drivers are unstable, framerate is poor (especially on MPEG-4 playback), and since it is a simple framebuffer, emulation does not work. Perhaps in the future, I'll switch from the nVidia card to the Hauppauge.

## Setup Guide and HOWTO

### 1. Download Gentoo GNU/Linux

I downloaded the 2004.0 release of Gentoo in the two CD flavor (GRP packages for Athlon XP on the second CD) to avoid the long compile times. One or two CDs, this install guide will still help.

### 2. Bring up the Base System

I used the standard Stage 3 Athlon XP tarball avoiding the long bootstrapping process from Stage 1 and 2. Follow the [Gentoo Install Guide](#) closely. **Important!** Specify your `USE` flags now to minimize recompilation. My `USE` flags for my system are below:

```
USE="x86 mmx 3dnow sse alsa avi crypt cscope dvd flac gif imlib jpeg lirc mad mpeg mysql oggvorbis opengl png
quicktime sdl tiff truetype X xmmx xv zlib nvidia -arts transcode xinerama -nls net joystick matroska -ldap apache2
xvid v4l2 theora"
```

**Note:** If you wish to use the GRP binary CD, *do not* perform an `emerge sync` yet!

### 3. Compile a 2.6 Series Kernel

Emerge `gentoo-dev-sources`. For the purposes of this guide, I will assume that the kernel is 2.6.5-r1. The `gentoo-dev-sources` already contains the `lirc/lirc-i2c` patches which is a blessing in disguise. **Note:** I can only guarantee that the options seen below are with 2.6.5-r1 kernel. If you want to emerge the same kernel I'm using, do:

```
emerge =gentoo-dev-sources-2.6.5-r1
```

Now, configure your kernel, and **in addition to the required Gentoo options** (like `devfs` support, see the Gentoo install guide), here are some additional kernel configuration options:

- Device Drivers --->
  - Multi-device support (RAID and LVM)
    - <\*> Device mapper support
      - <\*> ioctl interface version 4
  - Input device support --->
    - <\*> Joystick interface
    - <\*> Event interface
    - <\*> Joysticks
  - Character devices --->
    - Serial Drivers --->
      - <\*> 8250/16550 and compatible serial support
    - Linux InfraRed Controller --->
      - <M> Linux InfraRed Controller
      - <M> I2C Driver
    - <\*> Enhanced Real Time Clock Support
  - I2C support --->
    - <M> I2C support
    - <M> I2C device interface
    - I2C Hardware Bus support --->
      - <M> ISA Bus support
      - <M> Nvidia Nforce2
    - I2C Hardware Sensors Chip support --->
      - <M> EEPROM (DIMM) reader
      - <M> Winbond W83781D, W83782D, W83783S, W82627HF, Asus AS99127F
  - Multimedia devices --->
    - <M> Video For Linux
    - Video For Linux --->
      - <M> BT848 Video For Linux
  - Graphics support --->
    - <\*> Support for frame buffer devices
  - Sound --->
    - <\*> Sound card support
    - Advanced Linux Sound Architecture --->
      - <M> Advanced Linux Sound Architecture
      - <\*> OSS API emulation
      - <M> OSS Mixer API
      - <M> OSS PCM (digital audio) API
      - <M> RTC Timer support
      - PCI devices --->
        - <M> Intel i8x0/MX440, SiS 7012; Ali 5455; NForce Audio; AMD768/8111
  - File systems --->
    - <\*> XFS filesystem support

Obviously, if your hardware differs from mine, you should compile in the proper kernel options. I am opting **not** to post my kernel config file since hardware configurations greatly vary. Other notes: **Do not** select ACPI power management. If you need power management, go with APM. From my experience, ACPI makes the `ivtv` driver crash/freeze the system. If you don't plan on using gamepads/joysticks for emulation, just remove support for them above. AGP support does not need to be compiled in since the binary `nvidia` driver provides it's own GART interface. Note that if you do not own a Hauppauge PVR-250/350, but own a stereo-capable BT-compatible capture card (usually some form of an MSP or TDA chip), then you probably need to compile in the `Bt87x Audio Capture` under ALSA. The `I2C Hardware Sensors Chip Support` is not required. I compiled it in so I could take advantage of `lm_sensors` and monitor temperature and fan speed. Frame buffer support is only needed if you actually need a frame buffer for your primary VGA/DVI card or you want to use the Hauppauge PVR-350 framebuffer TV-out. Obviously, if you have a different sound card (non-intel8x0) then select the proper device. Configure additional options to your liking and hardware such as USB, Firewire, Network devices, etc.

Finish following the Gentoo Install guide and install the necessary system utilities (`syslogger`, `cron daemon`, `boot loader`, etc). Reboot.

### 4. Install Additional Packages

If you are using the GRP pre-compiled binary CD, insert the disc, mount it, then:

```
export PKGDIR="/mnt/cdrom"
emerge --usepkgonly <PACKAGE NAME>
```

A few binary packages you should take advantage of: xfree, gdm, mysql, vorbis-tools, a52dec, lame, sudo, vim, divx4linux, freetype, pciutils, xvid, flac, fontconfig, win32codecs. There are other pre-built binaries which you can install, please peruse the disc and install related multimedia files (such as mplayer, etc.).

## 5. nVidia and TV-Out

**Note:** If you want to use the WinTV PVR-350's framebuffer, you should consult section 7 and then appendix 2 instead of this section.

As of this revision of the document, nvidia drivers (5336) fail to overscan. The last overscan capable driver release was 4363. This is what we'll use since a non-overscanned TV-out looks like garbage. Go to [this webpage](#) and download the **4363** drivers modified to run under the 2.6 Linux kernel.

As root, run the install program (you may have to chmod it to set the executable bit). Say **no** to allowing the install program to find a newer version of the driver since this defeats the whole purpose of installing this old driver. Once it has installed, we need to create an /etc/X11/XF86Config-4 file capable of TV-Out. Currently, I'm running at 640x480 resolution since I'm not using the ivtv driver (which is capable of running at a native NTSC resolution of 720x480). The relevant sections from my XF86Config-4 file are:

```
Section "Monitor"
    Identifier "Sony TV"
    HorizSync 30-50
    VertRefresh 60
EndSection

Section "Device"
    Identifier "nvidia"
    Driver "nvidia"
    Option "NvAGP" "1"
    Option "NoLogo" "true"
    Option "HWCursor" "true"
    Option "RenderAccel" "true"
    BusID "PCI:2:0:0"
EndSection

Section "Screen"
    Identifier "Screen TV nvidia"
    Device "nvidia"
    Monitor "Sony TV"
    DefaultDepth 24
    Option "TVStandard" "NTSC-M"
    Option "ConnectedMonitor" "TV"
    Option "TVOutFormat" "COMPOSITE"
    Option "TVOverScan" "0.8"

    SubSection "Display"
        Depth 24
        Modes "640x480" "400x300" "320x240"
        ViewPort 0 0
    EndSubsection
EndSection
```

Note that the TVOverScan value is dependent upon your video card and TV. If you have your TV connected via an S-Video cable, change TVOutFormat to SVIDEO. Obviously, there are section missing in the XF86Config-4 file such as the mouse, fonts, etc. Fill in the appropriate sections according to your hardware configuration and test X. Now after the X runs successfully, lets inject stubs into portage so it thinks that the drivers are installed:

```
emerge inject media-video/nvidia-kernel-1.0.4363-r3
emerge inject media-video/nvidia-glx-1.0.4363-r3
```

Now any nvidia USE dependencies should be met.

## 6. ALSA and SPDIF Setup

Now, we'll attempt to get ALSA working. Our kernel has built the ALSA sound drivers, but we need to build the userland utilities to get ALSA working properly. First we need to sync our portage tree to get the latest sources. The following instructions are **specifically tailored** for the snd-intel8x0 ALSA module and S/PDIF output.

```
emerge sync
ACCEPT_KEYWORDS="~x86" emerge alsa-lib alsa-oss alsa-utils alsa-tools alsamixerui
```

You should try to grab the same ALSA lib/oss/utils/tools version which are present in the kernel you are using. Now modify `/etc/modules.d/alsa`:

```
alias snd-card-0 snd-intel8x0
alias snd-slot-0 snd-card-0
options snd-pcm-oss dsp_map=2 adsp_map=2
```

Now run **update-modules**. For *any user* who wishes to use the soundcard, you must have the proper `.asoundrc` file in their home directory. We will be creating a user called "mythtv" soon, so you will need to copy this file into mythtv's home directory. For now, let's just create it in the root directory. Here is my `.asoundrc` file:

```
pcm.nforce-hw {
    type hw
    card 0
}

pcm.!default {
    type plug
    slave.pcm "nforce"
}

pcm.nforce {
    type dmix
    ipc_key 1234
    slave {
        pcm "hw:0,2"
        period_time 0
        period_size 1024
        buffer_size 32768
        rate 48000
    }
}

ctl.nforce-hw {
    type hw
    card 0
}
```

The `pcm hw:0,2` line specifies the proper S/PDIF address to re-route PCM data to; you may have to modify this to match your specific setup. Add ALSA to the boot-up sequence, start it, and load either `alsamixer` or the `alsamixerGUI` program to configure your soundlevels:

```
rc-update add alsa default
/etc/init.d/alsa start
alsamixerGUI
```

Set the appropriate sound levels, remember to unmute the IEC (SPDIF) playback channels for sound output. Test playback using `aplay`, `madplay` or `xmms`.

## 7. ivtv Setup

Now we need to setup the driver that will enable our Hauppauge PVR 250/350 hardware MPEG-2 chip. First we need to [download the 0.1.9](#) release of the driver. Next, grab the [unofficial ivtv patch file](#) for your kernel version. After patching the source, follow these steps to build the ivtv driver:

```
cd ivtv/Utils
wget http://hauppauge.lightpath.net/software/pvr250/pvr250_17_21288.exe
./ivtvfwextract.pl pvr250_17_21288.exe
cd ../driver
make; make install
cd ../utils
make
cp ivtvfbctl ivtvplay mpegindex test_ioctl /usr/local/bin
```

Now we need to create the `modules.d` file. Create and edit a file called `/etc/modules.d/ivtv`:

```
alias char-major-81 videodev
alias char-major-81-0 ivtv
alias char-major-61 lirc_i2c
options ivtv ivtv-debug=0 mpeg_buffers=90
options tuner type=2
options msp3400 once=1 simple=1 debug=0
add below ivtv msp3400 saa7115 tuner
add above ivtv lirc_dev lirc_i2c
```

Add ivtv to the modules autoload. Edit the file `/etc/modules.autoload.d/kernel-2.6`, add the line:

```
ivtv
```

Finally, run `update-modules`. If you need to start `ivtv` now, run `modprobe ivtv`.

## 8. lirc Setup

First we need to emerge `lirc` and copy over config files:

```
ACCEPT_KEYWORDS="~x86" emerge lirc
rc-update add lircd default
cp ivtv/utils/lircd-g.conf /etc/lircd.conf
```

The last line above copies over the `lircd.conf` file for the Hauppauge Grey style remote that comes with the PVR 250/350 cards. The MythTV `lircrc` file will come later when we install MythTV.

## 9. Miscellaneous Setup before MythTV

Emerge `mplayer` and `qt`. You cannot use the binary package of QT since it does not have xinerama support if you wish to use MythBrowser and MythDVD. Otherwise, the binary package will work fine. Here are some miscellaneous steps to take before emerging MythTV:

```
ACCEPT_KEYWORDS="~x86" emerge mplayer
emerge qt corefonts ntp
ln -s /dev/cdroms/cdrom0 /dev/dvd
useradd -G users,audio,video,games,wheel mythtv
passwd mythtv
mkdir /home/mythtv
cp /root/.asoundrc ~mythtv/.asoundrc
chown mythtv:users -R /home/mythtv
```

The `useradd` line creates the `mythtv` user. We will use this user to control the mythfrontend and database fills. Also, it is important that you setup the `ntp-client` so the time on your machine is not too far off from what your cable box or provider is set to. The configuration file is located at `/etc/conf.d/ntp-client`. Don't forget to perform `rc-update ntp-client default`. It also may be advantageous to startup the Name Server Caching Daemon (`nscd`) in `/etc/init.d/`. You may even want to add this as a default level run service.

## 10. MythTV Installation

Now it's time to emerge the MythTV system and addons. If you have a Pentium 4 class machine, MythMusic may fail to compile. It has been suggested that `MARCH=pentium4` could be the culprit.

```
ACCEPT_KEYWORDS="~x86" emerge mythtv mythtv-themes mythbrowser mythdvd mythgame mythgallery mythmusic mythnews
mythvideo mythweather mythweb
```

Now let's configure the MySQL database. In the `mysqladmin` line, replace `new-password` with a password of your own:

```
/etc/init.d/mysql start
mysql_install_db
mysqladmin -u root password new-password
rc-update add mysql default
```

Now create the file `.my.cnf` in the `/root` directory which contains the following text (replacing `new-password` with the password you created above):

```
[client]
password = new-password
```

Now perform the following commands:

```
chmod 600 /root/.my.cnf
mysql < /usr/share/mythtv/database/mc.sql
crontab -u mythtv -e
```

The last line above will create a crontab entry for MythTV. You cannot add this into the system-wide crontab entry or you will get an XMLTV error. I want to run the TV listing update at 6AM every morning. Thus, while in the crontab editor, add these lines:

```
SHELL=/bin/sh
QTDIR=/usr/qt/3

0 6 * * * /usr/bin/mythfilldatabase --no-delete --quiet
```

Now we need to grab a few files from the MythTV source tarball. First [download the source](#). Now follow these steps:

```
tar jxvf mythtv-0.15.tar.bz2
cd mythtv-0.15/contrib/dct-channel
make
cp channel /usr/local/bin
cd ~mythtv
mkdir .mythtv
cd .mythtv
cp mythtv-0.15/configfiles/hauppauge-lircrc-native.lircrc lircrc
cd ..
ln -s .mythtv/lircrc .lircrc
```

The above steps copied over the channel changing binary (used to control the Motorola DCT-2244 cable box over RS-232) and copied over the MythTV specific lircrc file for the grey Hauppauge remote into the mythtv user's directory.

## 11. Create Video Storage with LVM

Instead of using a conventional filesystem straight on physical partitions, it's better to create logical partitions which can be expanded at later dates if you wish to add additional physical disks. I will be using SGI's XFS filesystem because of its excellent performance, journaling support, and code maturity. You may want to use IBM's JFS, however, it remains untested (I couldn't even get it to compile properly). ext3 can be used, but large file deletion performance is suspect. Another option is ReiserFS.

Hopefully you compiled in LVM support into the kernel. First, create physical partitions on each of the disks you wish to be part of the logical volume (use `fdisk` or `cfdisk`). In the example below, I will be using two partitions to create the logical volume group `/dev/hda3` and `/dev/hdb1`. First, we need to emerge the LVM and XFS userland tools, then we can begin creating our logical volume:

```
emerge lvm2 xfsprogs
vgscan
pvcreate /dev/hda3
pvcreate /dev/hdb1
vgcreate mythvideo -s 64 /dev/hda3 /dev/hdb1
vgdisplay mythvideo
```

Note that you need to run `pvcreate` on each of the partitions you wish to include in the logical volume group. Of course, you need to also add them to the `vgcreate` command as well. After running `vgdisplay` it will output a line `Total PE`. You need to use this value in the next command:

```
lvcreate -l <Total PE here> mythvideo -n video
mkfs.xfs /dev/mythvideo/video
mkdir /mnt/video
chown mythtv:users /mnt/video
```

Now create an `/etc/fstab` entry for the logical group:

```
/dev/mythvideo/video /mnt/video xfs defaults 0 0
```

Continue with the setup:

```
mount /mnt/video
mkdir /mnt/video/recordings
mkdir /mnt/video/livetv
chown mythtv:users /mnt/video/recordings /mnt/video/livetv
```

If you are using ext3/ext2, make sure you run the command `tune2fs -m 0 -i 0 -c 0` on the volume (or at least with the `-m 0` switches). By default, `mke2fs` reserves 5% blocks for the superuser account which can be significant in a multi-Gigabyte volume.

## 12. Test TV Tuner and Remote Control

Let's test our handiwork thus far. First, the TV tuner card:

```
modprobe ivtv
test_iocctl -u 0x3000
test_iocctl -p 4
test_iocctl -f width=720,height=480
test_iocctl -v input=3,output=1
```

```
cat /dev/video0 > test.mpg
```

After a while, break the process by pressing CTRL-C. Test the mpeg file by loading it with mplayer. You should get **BOTH** video and sound if your card has been configured properly. If not, try specifying different values for the `-p` parameter. Now let's test the remote control:

```
/etc/init.d/lircd start
irw
```

Now start mashing the buttons on the remote pointed toward the Hauppauge IR receiver. You should see control codes printing out on the console. If so, congratulations, lirc is running properly and your remote is configured. Press CTRL-C to break out of `irw`.

### 13. MythTV Setup

Now it's time to setup MythTV. Don't worry, we're almost there :) Run the following as the mythtv user. This will ask various setup parts of MythTV according to your setup, consult the [MythTV Master Backend Setup](#) for more information. If you have a cable box where it requires the "TV" to be set to a certain channel (in my case it's channel 3), then set the "Preset tuner to channel" to the appropriate channel in the Input Connections setup. Also remember to specify the correct locations of your Recordings and LiveTV directories you created above under LVM.

```
/usr/bin/mythsetup
(Answer yes to both questions)
mythfilldatabase
```

`mythfilldatabase` will take a while to complete. It will grab at least 7 (or more) days of program guide data **for ALL channels** even if you don't subscribe to them. Please be patient at this step. After this has completed, we can now run the mythbackend and start the frontend:

```
rc-update add mythbackend default
/etc/init.d/mythbackend start
mythfrontend
```

### 14. Post-Configuration Setup

Now it's time to setup the MythTV frontend. You should experiment with the settings to see which best fit your system, but there are a few I will mention here due to their importance. If using the 4363 nvidia drivers, you must **disable** Hardware XvMC MPEG decoding support under TV Settings/Playback. If you are using recent nvidia drivers (or the WinTV PVR-350 TV-Out) then you can leave it enabled. However, note that XvMC can conflict with some settings such as deinterlace.

Transcoding settings are a bit confusing if you don't know the "direction" in which it's referring to. Just remember that it's transcoding **FROM** the specified profile **TO** your settings in the profile. For instance, the Transcoding profile MPEG2 means if the original source file is MPEG2, then it will transcode that file using the profile. Do **not** select "Automatically transcode after recording" for transcoding profiles, unless you like transcoding loops. :) Make sure you really want to transcode before transcoding. If you have a Hauppauge PVR card, you can simply rename `.nuv` (NuppelVideo) files into `.mpg` files. To extract shows from the database and their `.nuv` format, use the [nuvexport](#) tool. This tool exists in portage:

```
ACCEPT_KEYWORDS="~x86" emerge nuvexport
```

You shouldn't set your recording profile dimensions to be greater than the resolution of your TV out. First, you'll be wasting valuable space, and second it won't look any better.

Here is my DVD playback command for the curious (I cannot use the `-ac hwac3`, option since I get a Big Endian format not supported error):

```
mplayer dvd:// -dvd-device %d -ao alsalx:spdif -srate 48000 -fs -zoom -vo xv
```

Note that mplayer does not properly support menus at this time. Use xine or ogle if you need DVD navigation/menu capability. Support for DVD menus is forthcoming in mplayer. And the video playback command:

```
mplayer -ao alsalx:spdif -srate 48000 -fs -zoom -vo xv %s
```

Deinterlace, jitter reduction, aggressive audio buffering all seem to be working like a champ for me.

### 15. Autologin and DPMS setup

We will use gdm to manage our autologin so when the machine boots, MythTV will automatically start. gdm should already be installed from the GRP. If not, emerge it. Next edit the `/etc/rc.conf` file and set `DISPLAYMANAGER="gdm"`. Next create an `/etc/X11/Sessions/mythtv` file that contains the following:

```
/usr/X11R6/bin/xset s noblank
/usr/X11R6/bin/xset s off
/usr/X11R6/bin/xset dpms off
(sleep 2; /usr/bin/mythfrontend &)
exec <YOUR FAVORITE WM>
```



The first three lines disable DPMS so your TV won't blank. I use fluxbox for the window manager; insert your favorite window manager in the last line. Now configure mythtv as your default login:

```
rc-update add xdm default
/etc/init.d/xdm start
```

The last line will start up X and gdm. Configure mythtv to be the autologin account using the **Configure** option (usually an icon or menu option somewhere off to the side or bottom). Login once using mythtv session (the one you just created) as the default session. Mythfrontend should now load automatically on boot.

## 16. Removing Unwanted Channels

See [this section](#) of the MythTV documentation on how to remove unwanted channels. If you are using the DataDirect service, simply unchecking channels in your online profile removes them from your lineup. If you are still using XMLTV, make sure you also put `not` in front of your channels in the xmltv file. Removing unwanted channels will speed up the xmltv update (mythfilldatabase) and you won't have to search through tons of channels that you don't get anyways for movie listings, etc.

The following is only for XMLTV users. To perform a mass deletion of a range of channels quickly from both the channel listing and program listing, first find the proper channel ID and then perform the MySQL delete command below. For example, I want to delete channels between 381 and 393. The channel IDs for those channels are 2381 and 2393 respectively on my system, thus issuing this SQL statement will delete channel and program entries:

```
delete FROM channel,program USING channel,program WHERE channel.chanid=program.chanid AND (program.chanid>=2381 AND
program.chanid<=2393);
```

## 17. MythGame Setup

To play all of our classic games, we can use the MythGame frontend. Unfortunately, MythGame isn't very usable in it's current state (in my experience from 0.14, this may have changed with 0.15) as Gentoo's xmame isn't supported and the SuperNES emulation is tailored specifically for the (imho) inferior snes9x. **Note:** You don't have to be in mythfrontend for the backend to record! With that being said, you can still exit the mythfrontend and play your roms (that you physically own, of course) using a terminal. Emerge the following:

```
emerge fceultra zsnes xmame gens
```

You may encounter compilation errors dealing with GL header files. If so, you need to issue `opengl-update xfree` before emerging the emulators.

## 18. MythWeb Setup

Make sure that you have specified `apache2` in your `USE` flags. When you emerge mythweb, `apache2` and `mod_php` should be compiled correctly. Now edit the file `/etc/conf.d/apache2` and add the line:

```
APACHE2_OPTS="-D PHP4"
```

Edit the `apache2` configuration file, `/etc/apache2/conf/apache2.conf` and specify the `DocumentRoot` and `ServerName` (if necessary):

```
ServerName hostname
DocumentRoot /var/www/localhost/htdocs/mythweb
```

To speed things up, we should enable `php zlib` compression. To do so, edit the file `/etc/php/apache2-php4/php.ini` and modify the `zlib` compression line to:

```
zlib.output_compression = On
```

Now add `apache2` to the default services and start it. `Apache2` takes a while to start for the first time to generate Digest information.

```
rc-update add apache2 default
/etc/init.d/apache2 start
```

You should now be able to access your myth box through a browser pointing at its IP address, e.g. `http://192.168.1.100/`. To restrict access to MythWeb, you can add authentication via `htaccess`. To do so, edit the file `.htaccess` under `mythweb` and uncomment the first 4 lines. Then in `/var/www/` run:

```
htpasswd2 -c htpasswd mythtv
```

Type in a password for the mythtv user. Of course you can use any combination of user/passwords as you like or even add more than one account.

## Appendix 1. Universal Remote Configuration (One-For-All URC-6131)

I purchased a One-for-all universal remote, model URC-6131 because I didn't like the Hauppauge Grey remote that the PVR-350 comes with. Setting the VCR code to 0081 allowed the remote to speak the proper protocol with the Hauppauge IR receiver. Next, I used `irrecord` to capture as many keys as I could. Finally I used the `Keymover` function to unify all controls of my system from the receiver/TV/



cable box onto the PVR buttons. It works nicely. If you want the `lircd.conf` and corresponding `lircrc` files, email me and I will send them to you. With enough requests, I may make them downloadable here.

## Appendix 2. ivtv Framebuffer TV-out Setup

First you need to patch ivtv and install an additional X driver. Download the `prepdma` patch into the `ivtv` directory.

```
wget http://membres.lycos.fr/badzzzz/ivtv-fb-fix-prepdma.diff
cat ivtv-fb-fixpredma.diff | patch -p1
wget http://membres.lycos.fr/badzzzz/ivtvdev_drv.o.gz
gunzip ivtvdev_drv.o.gz
mv ivtvdev_drv.o /usr/X11R6/lib/modules/drivers/
```

If you want to use the ivtv framebuffer for it's picture sharpness, hardware MPEG decoding, and full NTSC resolution (and working overscan), then you need to modify your ivtv modules file and `XF86Config-4`. First, the `/etc/modules.d/ivtv` file needs to be modified to:

```
alias char-major-81 videodev
alias char-major-81-0 ivtv
alias char-major-61 lirc_i2c
options ivtv ivtv-debug=0 mpeg_buffers=90
options saa7127 enable_output=1 output_select=0 options tuner type=2
options msp3400 once=1 simple=1 debug=0
add below ivtv msp3400 saa7115 tuner saa7127
add above ivtv lirc_dev lirc_i2c ivtv-fb
```

If you want to use S-Video instead of composite out for the PVR card, then change `output_select=0` to `output_select=1`. Run `update-modules`. Now we need to modify `/etc/X11/XF86Config-4`. But first, we need to find the BusID of our PVR card. Run `lspci -v`. You should see something like this:

```
01:09.0 Multimedia video controller: Internext Compression Inc iTVC15 MPEG-2 Encoder (rev 01)
Subsystem: Hauppauge computer works Inc. WinTV PVR-350
Flags: bus master, medium devsel, latency 32, IRQ 12
Memory at d8000000 (32-bit, prefetchable) [size=64M]
Capabilities: [44] Power Management version 2
```

Take note of the first set of numbers. In my example it is "01:09.0". You need to convert this into hexadecimal. Since there is no number greater than 9, we don't have to do any conversion. Now let's modify the `/etc/X11/XF86Config-4` file:

```
Section "Monitor"
    Identifier "Sony TV"
    HorizSync 30-50
    VertRefresh 60

    Mode "720x480"
        DotClock 34.564
        HTimings 720 752 840 928
        VTimings 480 484 488 504
        Flags "-HSync" "-VSync"
    EndMode
EndSection

Section "Device"
    Identifier "ivtv"
    Driver "ivtvdev"
    Option "fbdev" "/dev/fb1"
    BusID "01:0x09:0"
EndSection

Section "Screen"
    Identifier "Screen TV ivtv"
    Device "ivtv"
    Monitor "Sony TV"
    DefaultDepth 24
    DefaultFbBpp 32

    SubSection "Display"
        Depth 24
        FbBpp 32
        Modes "720x480"
        ViewPort 0 0
    EndSubSection
EndSection
```

Make sure your framebuffer device is correctly referenced. Mine is `/dev/fb1` since I have a framebuffer running on the Geforce4 card as well.

Note that I've had numerous hangs/crashes/freezes with the `ivtv` driver using TV-out while just watching TV and watching/recording at the same time.

### Appendix 3: Upgrading MythTV to 0.15 and Migrating to DataDirect

**Update:** Official mythtv 0.15.1 ebuids have entered into portage. The previous copy/digest procedure is no longer necessary and has been removed. However, you still have to upgrade the mysql database properly and perform a mythsetup.

With the new release of 0.15, North American users can dump the XMLTV update scheme and go for the more elegant DataDirect service provided by Zap2it. Follow these steps to get your MythTV functioning under 0.15 and DataDirect. First we need to back up our database just in case something goes wrong:

```
mysqldump mythconverg -c > backup.sql
```

Now head on over to [labs.zap2it.com](http://labs.zap2it.com) and create a free account. Use the code ZIYN-DQZO-SBUT courtesy from mythtv.org. Next we need to create a copy of our channel table. While in mysql, issue this SQL command:

```
CREATE TABLE channel_copy SELECT * FROM channel;
```

Now comes the tedious process of upgrading. When performing the mythsetup program, make sure you say yes to clear program and channel settings. Also, for your data provider, make sure you select DataDirect. Follow these steps exactly (make sure that you will emerge wget version `>= 1.9.1`. If not, perform an `emerge sync` first):

```
emerge sync
ACCEPT_KEYWORDS="~x86" emerge wget mythtv mplayer
/usr/bin/mythsetup (clear all program/channel settings: say yes)
/usr/bin/mythfilldatabase
/etc/init.d/mythbackend restart
```

Now copy over the channel icons. Assuming you have MySQL v4+, issue these two SQL commands:

```
UPDATE channel,channel_copy SET channel.icon = channel_copy.icon WHERE channel.callsign = channel_copy.callsign;
drop table channel_copy;
```

Now we need to compile all of the plugins. For example, for mythvideo:

```
ACCEPT_KEYWORDS="~x86" emerge mythvideo
```

Repeat this process for `mythdvd`, `mythmusic`, `mythbrowser`, `mythweather`, `mythnews`, `mythgallery`, `mythgame`, and `mythweb`. You may also need to run `opengl-update xfree` first before emerging `mythmusic` and `mythgallery`, unless you have emerged "proper" nvidia drivers (gcc can't seem to find the GL header files even though they exist at the right locations!)

One final thing to note, if you upgraded mplayer to the latest, `alsa9` audio output has been replaced with `alsalx`. Change your player settings from `-ao alsa9:spdif` to `-ao alsalx:spdif`.

### Appendix 4: Links

- [Official MythTV Website](#)
- [Official ivtv Website](#)
- [MythTV Users Mailing List](#)
- [ivtv Mailing List](#)
- [ivtv Wiki](#)
- [Fedora Myth\(TV\)ology](#)
- [PVR Hardware Database](#)

### Contact Information

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