

The  
Pamphlet  
of  
KnoppMyth

R5 Edition

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## The Pamphlet of KnoppMyth

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## Acknowledgments

Many thanks to my parents Hugh and Cornelia Watson Sr. for getting us our first computer. Special thanks to R. Dale Thomas who provided the first mirror for KnoppMyth. Shortly after meeting Dale, he joined me in developing KnoppMyth. Without his help, KnoppMyth wouldn't be what it is today. Of course KnoppMyth wouldn't be KnoppMyth without Knoppix and MythTV. Klaus, Isaac thank you very much. Many thanks to Xsecrets, tjc, Liv2Cod, Human and all members of the forum. My thanks to the entire Open Source community. When the source is open, the possibilities are endless.

## Introduction

### ***What is Linux?***

Linux is a kernel. The kernel is the heart of an operating system. Combined with utilities and programs, the kernel is packaged in what is called a distribution. A Linux distribution can perform the same functions as other more famous operating systems you may have heard of. Linux is used in everything from embedded devices to super computers.

### ***What is Knoppix?***

Knoppix is a distribution that runs “live” from the CD. This means, you don't have to install it to the hard drive to try Linux. Knoppix can be used as a rescue disk and more!

### ***What is a PVR?***

A personal video recorder or PVR is a device that records television programs. A PVR is sometimes referred to as a digital video recorder or DVR. A PVR stores the programs on a hard drive in a digital format. Using a PVR, you can do things like pause live TV and

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more.

### ***What is MythTV?***

MythTV is an open source PVR project. In addition to the traditional PVR functions, it has the following modules :

- MythArchive: Allows you to create DVDs of recorded shows<sup>1</sup>
- MythBrowser: Browse the Internet from your couch.
- MythDVD: DVD player and backup.<sup>2</sup>
- MythGallery: Image viewer and slide show module.
- MythGame: Frontend for various emulators and PC games.
- MythMusic: Store and listen to your music collection.
- MythNews: RSS newsfeed module.
- MythPhone: Video conference from your couch.
- MythVideo: Frontend for playing videos (MPEGs, XVID, etc) files.
- MythWeather: Frontend for getting the weather forecast.
- MythWeb: Control various aspects of MythTV from a web browser.

### ***What is KnoppMyth?***

KnoppMyth is a Linux distribution that was originally a remaster of Knoppix. Knoppix can be changed to remove or include what you desire. This process is called remastering. With the release of KnoppMyth R5, KnoppMyth is no longer remastered but built from scratch using Debian GNU/Linux and the wonderful programs from Knoppix. KnoppMyth is geared at setting up a PVR in a quick and easy manner. Given hardware that is supported by Linux, you can setup your own PVR that not only equals but surpasses many commercial offerings.

KnoppMyth includes MythTV and all its official plugins. In addition, KnoppMyth includes Apache, NFS, Samba, and various other daemons. Everything one needs to

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1 MythArchive is currently only available via SVN. It won't be included in a release of KnoppMyth until 0.20 of MythTV is released.

2 KnoppMyth doesn't include software to play or backup encrypted DVDs.

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easily setup a power home entertainment system is included. In addition to the official plugins, KnoppMyth includes:

- MythBurn: Allows you to produce a DVD of recorded shows via MythWeb or via MythBurn-UI.
- MythStream: Plays audio and video feeds from the Internet.
- MythStreamTV: Allows for the live transcoding and streaming for MPEG-1 and 2 content.
- nuv2disc: Plugin that allows you to create D/VCDs of recorded programs.
- nuvexport: Allows you to export/transcode recordings to various formats.

## Hardware

### ***Introduction***

The most integral step in creating stable PVR is choosing the right hardware. Before purchasing hardware or using existing hardware, you should have an idea of how you intend to set up your home entertainment system.

**MythTV's Architecture:** MythTV has a frontend/backend architecture, which means frontend (user interface) is separate from the backend. This means you can have multiple systems communicating with one another to form a powerful yet easy-to-use home entertainment system.

**TV Tuner:** In order to watch TV on a computer, you need a TV tuner. Tuners can be placed in three categories:

1. “Software” tuners: The central processing unit is used to encode the stream.
2. “Hardware” tuners: The tuner has the capability of encoding the stream. This method uses less of your CPU, so a powerful system isn't required.
3. “Digital” tuners: Digital tuners are ATSC/HDTV or DVB tuners that basically just write the digital broadcast data stream to your hard drive.

### ***Recommendation***

I wouldn't recommend getting the latest greatest fastest processor and video card. While video processing is CPU intensive, getting the latest and greatest is a waste of

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money. You may also find that the latest hardware may not work with Linux right away. We live in a world where numbers matters, so manufacturers will offer their products to the OS with the greatest market share. Unfortunately, this mean Linux user may have to wait months for support. This however isn't a big issue as you'll find even a 4 year old system can be used as a capable PVR. Before you purchase anything, you'll have to ensure that it is Linux compatible.

If you are going to use your set-top box like a traditional VCR, that is record a program at a set time and watch it at a later time, a system built around a AMD Duron 700 and a software tuner would be my recommended starting point. At a minimum, I'd recommend hard drive no smaller than 40 gigabytes. This system needs no more than 256 megabytes of RAM.

If you intend to record two programs at once or watch one while recording then, I'd recommend a system built around and AMD Athlon 1800+ with one software tuner and one hardware tuner. At a minimum, I'd recommend hard drive no smaller than 80 gigabytes. This system needs no more than 256 megabytes of RAM.

If you intend to watch HDTV, then a system build around an Athlon XP 2800+ and an video card based on the nVidia Geforce 5200 would be my recommendation. With the Geforce 5200, you can enable X Video Motion Compensation which reduces CPU overhead. I recommend no less than 512 megabytes of RAM.

These recommendation are based on my personal experience. If you search the KnoppMyth forum, you'll find that some folks are using a Pentium II 250 w/ a Hauppauge 350 with great success. I'd recommend no more than a gigabyte of RAM in your PVR. You can also find recommendations in the appendix.

The forum is a great place to research your hardware before purchasing. The hardware section is divided into three sections:

Tier One:If you've installed KnoppMyth and things just worked without having edit anything.

Tier Two:If you've installed KnoppMyth and had edit any file to get things working. Please explain what you did to get things working.

Tier Three:Hardware to avoid, couldn't get it working no matter what you did. Please

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provide steps taken(someone may have the same problem and got it to work).

### ***KnoppMyth Reference Platform***

The KnoppMyth Reference Platform or KRP, is a certified system configuration meeting certain criteria for environmental performance, speed, stability, and support of MythTV functions. Some criteria are objective and some are subjective, but all criteria are selected to ensure a smooth MythTV experience. As newer releases of KnoppMyth are created, special effort will be taken to ensure that there are no regressions to any KRP-certified hardware. In addition, any user of a KRP-certified system will have a streamlined installation and upgrade experience when using KnoppMyth.

Many in the MythTV and KnoppMyth communities have expressed an interest in knowing what hardware “just works” with MythTV. KnoppMyth does a great job making the software more accessible by its automated installation process, but until now, no major efforts have been made to make the hardware half of the MythTV experience easier.

KRP eliminates the guesswork involved in choosing hardware for a new MythTV system. Even for Linux gurus, selecting the right hardware that works well with MythTV and has the right environmental characteristics can be daunting. Sometimes taking several costly iterations and time-consuming mods and tweaks before getting everything just right. The task can be almost insurmountable for computer novices who recognize what MythTV has to offer, but lack the experience required to put it all together. With KRP, a new user has their own installation option on the KnoppMyth install disc. They can be assured that the developers will attempt to maintain compatibility with their hardware choice on future releases.

KRP acts as a stamp of quality on a set of hardware. If a system is KRP-certified, it means it will work consistently with a given version of KnoppMyth. Certification is redone for new versions of KnoppMyth, which enables you to make better decisions about when to upgrade.

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KRP enables KnoppMyth developers to focus on making sure that new releases of KnoppMyth work with KRP hardware. As it currently stands, the team tests on the hardware they have available to them, usually their personal systems, and there is a reliance on alpha and beta testing from the community. The KnoppMyth team will have one of each KRP system at their disposal against which to test KnoppMyth compatibility.

KRP enables authorized vendors to sell pre-assembled KRP systems and unassembled kits, for MythTV enthusiasts who want a quick and easy hardware solution.

*What does KRP not do for me?*

KRP does not eliminate any underlying flaws in Linux or MythTV. For example:

Commercial flagging in MythTV has improved greatly over the years, and it's now near-perfect when HDTV is involved, but there are still certain transitions in and out of commercials that fool it. Merely using a KRP system will not make this issue go away.

Linux does not support every make and model of digital camera. Using a KRP system will not enable you to communicate with an unsupported digital camera to transfer your images to MythGallery.

*If I don't have a KRP system, will I still be able to use KnoppMyth?*

Absolutely! If you don't have a KRP system, you will not be abandoned by any means. However, just as it is today, the most common hardware gets the best coverage and community support. For example, the most common capture cards are the PVR-250, PVR-350, HD-3000, and Air2PC. If you own an uncommon capture card, you may experience regressions between KnoppMyth releases and/or have a hard time finding answers to your questions on support fora. By extension, if your system consists entirely of uncommon hardware components, your chances of running into problems increase greatly.

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Turning this around, imagine if you had a system built entirely of common components. The support would be much better.

*Can I design my own KRP system?*

We are working on the logistics of this. As you can imagine, there are hundreds if not thousands of hardware configurations that could achieve certification. If each of them were formally certified, the KnoppMyth developers would spend more time doing regression testing and less time making improvements. Even something as simple as the addition of a new HDD to an existing KRP would require re-testing the KRP because of potential heat and noise issues. Please contact me if you're interested in having your system certified.

*Where can I buy a KRP system?*

KRP systems can be bought from the MythTV Store at Mythic.TV. The first available KRP system is Dragon.

*Dragon is a combination front- and back-end system. Will there be KRP systems that are just one or the other?*

Yes, there will be KRP systems that are just front-end boxes, and some that are just back-end boxes.

# KnoppMyth

## ***Installation***

It is recommended that your hard drive be set to master on the primary IDE channel. Your C/DVD-ROM drive should be on the secondary IDE channel.

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In your BIOS, set the system to boot from CD.

At the splashscreen press:

for no TV out:

<ENTER>

with TV out:

tv<ENTER>

This will set your video adapter to a resolution of 800x600.

Note: You'll still need to edit /etc/X11/XF86Config-4 to change the refresh rate or you CAN destroy your TV.

Once the CD boots, you see 6 options.

Frontend

Auto Install

Auto Upgrade

Manual Install

Reboot

Quit

I'll now go into detail describing what the first four of these do, the last two are self explanatory.

### **Frontend**

This allows you to use the CD as a frontend if you have a MythTV backend setup. You can select this option by pressing <ENTER>. After providing the requested information, the CD will boot X and start mythfrontend.

Note: The backend and frontend must be the same version. This is a MythTV restriction not a KnoppMyth restriction. Using the CD as a frontend is dependant upon the backend being configured with MySQL listening on the network.

If you are running KnoppMyth as your backend server, Then on the backend:

Edit /etc/mysql/my.cnf, comment out 'skip-networking'. The backend will only accept the mythtv user with a password of mythtv.

Before:

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skip-networking

After

# skip-networking

Restart MySQL(as root)

# /etc/init.d/mysql restart

Reconfigure MythTV (as the mythtv user)

\$ mythtv-setup

On screen 1 change 127.0.0.1(both instances) to the actual IP of the backend server.

<ESC> out of the myth-setup.

End of backend section.

### ***Auto Install***

This will automatically perform a complete installation of KnoppMyth. Just provide the requested information in the various dialogs and sit back! Don't create a user called "mythtv", this user has already been created with a password of "mythtv". Auto install will only work on /dev/hda. That is an IDE/PATA drive on primary master. After the system reboots it will start X and KnoppMyth will open an Xterm and ask for the root password. See configuration.

### ***Auto Upgrade***

**\*\*NOTE\*\* You must have performed a backup for Auto Upgrade to work.**

This will automatically upgrade KnoppMyth from an earlier version (R3 or R4) on hda. If KnoppMyth isn't installed on hda, then just a manual install. Just provide the requested information in the various dialogs and sit back! Don't create a user called "mythtv", this user has already been created with a password of "mythtv". You should use the same hostname as well. After the system reboots it will start X and KnoppMyth will open an

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Xterm and ask for the root password. See post configuration

### **Manual Install**

Manual install is recommended only for advanced users. Currently if you have an SATA drive, you must use Manual Install. You will see two options 1. Partition and 2. Quit, on a new drive or a drive with an invalid partition table. If you see six options, KnoppMyth recognizes the partition table. Either way, you must partition the drive. Select partition and create 3 partitions using cfdisk. The first will be /, the second swap, the third /cache and fourth /myth. I recommend 5 gigs for /, swap should be 1.5 times memory. Use the rest of the drive for /myth. Ensure /dev/xda1 is bootable, write the partition table and quit cfdisk. Once the partitions have been created, press <CTRL><ALT><F2>. mkswap /dev/xda2 && swapon /dev/xda2. Format /dev/xda3 with the desired filesystem type. Once complete <CTRL><ALT><F1> and return to the installation.

Note: During the making of partitions, you can choose any fstype you wish.

```
# mke2fs -j -O sparse_super -m0 -i8000000 -L myth -M /myth /dev/hda3
```

(I highly recommend a journalling fs for /dev/hda3).

You should now see six option. Choose 4. Load config. You should now see /KNOPPIX/knoppmyth. Press <ENTER>. If you have an SATA drive, change this to /KNOPPIX/knoppmyth-sata and press <ENTER>. Next, choose 1. Configure Installation. Provided the requested information. Don't create a user called "mythtv", this user has already been created with a password of "mythtv". Once back to the main menu, select 2. Start installation. Verify the information and sit back. Once complete, reboot the system. After the system reboots it will start X and KnoppMyth will open an Xterm and ask for the root password. See configuration.

### **Manual Upgrade**

**\*\*NOTE\*\* You must have performed a backup for the upgrade to work.**

Perform the same steps as a Manual Install, however don't format the additional partitions.

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When X starts, enter the wrong password. Press <ALT><X> and type:

```
rm -fr .configure
touch .upgrade
exit
```

Right click on the desktop and select 'Restart'.  
Enter your root password and follow the steps.

### **Configuration<sup>3</sup>**

After installation and the system reboots<sup>4</sup>, the XFree86 implementation of the X Window System<sup>5</sup> will start automatically via the GNOME Display Manager. The user mythtv will automatically be logged into the Fluxbox window manager. An xterm will automatically open and ask for the root password. Input the password you created during the installation process, press <ENTER> and follow the steps.

In order to start and stop your recordings on time, you should ensure you have the correct time. The first step in configuration is to setup your timezone and date/time. Once this is correct, ensure OK is highlighted and press <ENTER>. KnoppMyth include NTP server which should keep your time synced.

The next step is setting up networking, in most cases this will be eth0. Simply press <ENTER> and follow the dialog. If you have an Hauppauge PVR 350, it will be detected at this point. If you wish to use this card's TV out, then answer 'Yes'. While the 350 does have a TV out, it isn't a dedicated video card.

After this, KnoppMyth will continue to setup the system for you. KnoppMyth will automatically start mythtv-setup so that you may configure MythTV.

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3 If you are in North America and you intend on using Direct Data, you must first create an account at <http://labs.zap2it.com>. Ensure you use **ZIYN-DQZO-SBUT** as the certificate code.

4 If you have a video card with an nVidia based chipset, the drivers will be automatically installed upon first rebooting or when you add once. If you own a video card with an ATi 8500 or above, take a look at /usr/src/ATi.

5 It is the X Window System, not X Windows System.

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When the setup is started, simply select your language and press <ENTER>. After this, you should see:

1. General
  - This is where you configure general settings, set path to record, etc. These settings are already configured out the box. Unless you plan on having multiple backends or remote frontends, there is nothing you need to do here.
2. Capture cards
  - This is where you configure your tuner card. If you have a pcHDTV tuner, you should use the DVB DTV card type.
3. Video sources
  - This is where you setup your video source so you can download program listings.
4. Input connections
  - In order for your video source(s) to be associated with you capture card(s), you must bind them together here.
5. Channel Editor
  - Used to alter channels data, fine tune, etc.

I'll take the assumption that you are setting up a single back/frontend combination. Take a look at LinHES in the appendix for details on setting up multiple backends. Using the arrow keys on your keyboard, arrow down to 2. Capture cards and press <ENTER>. Press <ENTER> on (New capture cards). In Card type<sup>6</sup>: Select the type for are you have, the options are:

- Analog V4L capture card
- MJPEG capture card
- MPEG-2 encoder card
- DVB DTV capture card
- pcHDTV DTV capture card (w/V4L drivers)<sup>7</sup>

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<sup>6</sup> See Appendix C for a list of supported cards.

<sup>7</sup> You should not use this, use DVB instead.

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- FireWire cable box
- USB MPEG-4 encoder box
- DBox2 TCP/IP cable box

Depending on your card type, you'll need to select the appropriate 'Video device' and 'Default input'.

Press <ESC> and select 3. Video sources and select (New video source). In “Video source name:”, give the source a name such as 'cable' or 'OTA'. Next, scroll thru the list of XMLTV grabbers and select the grabber for your region of the world.

If you are using Data Direct, be sure you enter the 'User ID' and 'Password' you defined at labs.zap2it.com. The 'Perform EIT Scan' is used if you want grab your data list over the air<sup>8</sup>. Move to 'Finish' and press <ENTER>. If you have multiple tuners, such as a DVB and a MPEG-2, you mostly like have multiple video sources. You need to ensure you set both up. If not, press <ESC>.

At this point, you should be back at the main mythtv-setup menu. Press <ESC> to exit. You should see “If this is the master...”, simply press <ENTER>.

At this point, KnoppMyth will grab one day's worth of listing. This is done to speed up the installation process. Normally, if you went on to configure mythtv-setup using 4. Input connections, mythtv would want to grab a full 13 days of listings. After this, mythtv-setup will be ran again.

Navigate to '4. Input connections', select the cacrd you previously defined. You can enter an optional 'Display Name' such as PVR-250 for a Hauppauge PVR-250. You much bind the input to a 'Video source'. You'll notice that the 'Starting channel' has changed. If you have an “IR-Blaster”, you'll most likely need a program to change the channels. This goes in 'External channel change command'. 'Preset tuner to channel' is for an external tuner.

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<sup>8</sup> For ATSC and DVB tuners only.

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If you want to change the 'Starting channel', you can scroll thru the list the that mythfilldatabase downloaded. If you have an ATSC or DVB tuner, you should 'Scan for channels'. I'd suggest a 'Channel Separator' other than 'None'. I'd also suggest "Rename to Match" for 'Existing Channel Treatment'. Move to 'Next>' and press <ENTER>. Once the scan is complete, select 'Finish'. This will that you back to the 'source to input' screen. Select your 'Starting channel' and 'Finish'. Press <ESC>, <ESC> and <ESC> again and you are done.

At this point, KnoppMyth will run mythfilldatabase again to grab the next 12 days of listings. Based on your location, KnoppMyth will automatically setup MythWeather. If you are in North America, the next step is to download icons. Simply follow the prompts.

Bootsplash will display and image when the system is booting up and shutting down. If you wish to use it, answer 'Yes'. The next step in the setup is to select your remote. Just select it from the list. If your remote isn't listed, your should refer to <http://www.lirc.org> for information on setting it up. Once you've set it up, you should provide details on the forum so that it may be incorporated into future releases.

The next stage in the process is to select the device you are controlling if you have an "IR Blaster". Simply follow the prompts. Software Suspend will write the state of the system into your swap partition. If you hibernate, when you power the system back up it will resume exactly where it left off. The system will also come up much faster. At this point, work still needs to be done on the configuration files to make this seem less.

If you intend on playing games, I'd suggest loading RomDB. Simply follow the prompts. At this point, you can enter a password for access MythWeb. If you wish to disable this later, as root run:

```
ToggleWebSecurity.sh -mythweb
```

The rest of the installation is automated. ALSA will be setup, MythStreamTV will be installed as well as MythBurn. KnoppMyth will then start mythfrontend. This completes the configuration of the system. You should now be able to watch TV.

## ***Additional Software***

### ***FAQs***

#### ***Where to find help***

<http://mysettopbox.tv/phpBB2/index.php>

<http://knoppmythwiki.org>

<http://mythtv.org/modules.php?name=MythInfo>

<http://gossamer-threads.com/lists/mythtv/>

<http://gossamer-threads.com/lists/ivtv/>

<http://lirc.org>

## **Appendix A:Hardware Recommendations**

### ***Tier 1 systems***

Thanks to the folks on the forum who provided their system information.

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Video type: SDTV

Type of system: combined front- and back-end

Noise level: I can barely hear it from 5 feet away

CASE: Antec SLK1650B

PSU: Antec 350W SmartPower ATX12V (bundled with case)

MOTHERBOARD: Epox EP-9NDA3+ Nforce3 939

CPU: Athlon 64 3200+ Venice core

RAM: Kingston KVR400X64C3AK2/512

CPU HEATSINK: Zalman 7000B-AICu

NORTHBRIDGE HEATSINK: supplied with motherboard

CD/DVD-RW: NEC ND-3520A DVD

HDD: 2 Seagate ST3250823A (using LVM)

GRAPHICS CARD: Rosewill 128MB AGP FX5200, using S-Video out

SOUNDCARD: motherboard, builtin Realtek ALC-65x AC97 v2.3

TUNER CARD: Hauppauge WinTV-PVR-250 model 980, PVR-150 Model 1045

REMOTE CONTROL: Hauppauge grey, Solidtek ACK-571 wireless keyboard

Video type: HDTV & SDTV

Type of system: combined front- and back-end

Noise level: I can barely hear it from 5 feet away

CASE: Antec Sonata II

PSU: Antec 380

MOTHERBOARD: Abit NF7-S

CPU: AMD Athlon(tm) XP 2500+

RAM: 1GB

CPU HEATSINK: Artic Cooling

NORTHBRIDGE HEATSINK: Aluminum aftermarket

CD/DVD-RW: NEC DVD\_RW ND-3500AG

HDD: 1x80GB IDE, 1x120GB IDE, 1x250GB IDE, 3x250GB SATA

GRAPHICS CARD: nVidia GeForce 5500FX

SOUNDCARD: nforce 2 built-in

TUNER CARD: 2xPVR-250, 1xDVICO Fusion Lite, Firewire

REMOTE CONTROL: Wireless Keyboard + Harmony Universal

Video type: SDTV

Type of system: combined front- and back-end

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Noise level: I can tell it's on until I play some media  
CASE: : Compaq Presario SR1010Z  
PSU: Seasonic 330W S12 (dropped noise significantly)  
MOTHERBOARD: OEM Compaq SIS760/964 chipset  
CPU: AMD Athlon 64 3200+  
RAM: 512MB DDR400  
CPU HEATSINK: OEM Compaq  
NORTHBRIDGE HEATSINK: OEM Compaq  
CD/DVD-RW: Unknown DVD-R  
HDD: Western Digital Caviar S16 SATA 400GB and a Western Digital Caviar RE2  
SATA 400GB and a Hitachi Deskstar 180GXP PATA 120GB  
GRAPHICS CARD: Geforce 440MX w/ TV out (OEM Nvidia from a Gateway)  
SOUNDCARD: Soundblast Live Audigy  
TUNER CARD: PVR250  
REMOTE CONTROL: MS MCE2 (1/2 works)

Video type: SDTV (UK DVB-T)  
Type of system: combined front- and back-end  
Noise level: I can tell it's on until I play some media  
CASE: Coolermaster (forget which one...)  
PSU: Ebuyer 300w  
MOTHERBOARD: a7n8x-vm  
CPU: Sempron 2800  
RAM: 512mb Crucial DDR400  
CPU HEATSINK: Thermalright si-97  
NORTHBRIDGE HEATSINK: default  
CD/DVD-RW: NEC 3550 DVD-RW  
HDD: 2 x Maxtor 250Gb Diamondmax 10  
GRAPHICS CARD: onboard  
SOUNDCARD: onboard  
TUNER CARD: 2 x Hauppauge Nova-T  
REMOTE CONTROL: Silver Hauppauge

Video type: SDTV  
Type of system: combined front- and back-end  
Noise level: I can tell it's on until I play some media  
CASE: Silverstone LC10

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PSU: Thermaltake PS-W0062  
MOTHERBOARD: MSI K8N NEO4-F  
CPU: Athlon 64 3500+  
RAM: 1GB Corsair (VS1GBKIT400)  
CPU HEATSINK: Zalman CNPS7000B-ALCU  
NORTHBRIDGE HEATSINK: Zalman CA-ZMNB32J  
CD/DVD-RW: NEC ND-3550A  
HDD: Seagate ST3400632A  
GRAPHICS CARD: MSI GeForce NX6200TC-TD64ES  
SOUNDCARD: Onboard  
TUNER CARD: 1x PVR-500, 1x PVR-250  
REMOTE CONTROL: ATI Remote Wonder

Video type: SDTV (PAL)  
Type of system: combined front- and back-end  
Noise level: I can tell it's on until I play some media  
CASE: Sereniti 2000  
PSU: Generic. Came with case.  
MOTHERBOARD: EPIA MII 12000  
CPU: 1.2 GHz Nehemiah  
RAM: 512MB  
CPU HEATSINK: Stock, 40mm fan  
NORTHBRIDGE HEATSINK: Stock, passive  
CD/DVD-RW: MSI 16x DVD ROM  
HDD: 1 x WD 12000JB, 1 x Hitachi Deskstar 7K250  
GRAPHICS CARD: On-board  
SOUNDCARD: On-board  
TUNER CARD: Hauppauge WinTV 250  
REMOTE CONTROL: Hauppauge A415-HPG "Dog Bone"

Video type: SDTV (S-Video to an old RCA TV)  
Type of system: front-end  
Noise level: I can tell it's on until I play some media  
CASE: Sony DSS Case (guttled)  
PSU: Enhance 90W Micro ATX  
MOTHERBOARD: VIA EPIA-M10000  
CPU: VIA C3 1 GHz

## The Pamphlet of KnoppMyth

RAM: 256 MB (266 MHz DDR)  
CPU HEATSINK: Stock fan  
NORTHBRIDGE HEATSINK: Stock, no fan  
CD/DVD-RW: External Case via USB w/ CompUSA DVD  
HDD: Hitachi 6GB Laptop 5400RPM  
GRAPHICS CARD: Onboard (Unicrome Pro)  
SOUNDCARD: Onboard (VIA VT1617A)  
TUNER CARD: On backend  
REMOTE CONTROL: Hauppauge MCE Remote from PVR150 on the backend.

Video type: SDTV  
Type of system: combined front- and back-end  
Noise level: I can tell it's on until I play some media  
(In my living room, can only hear at night when it's completely quiet)  
CASE: Generic MicroAtx Case Similar to  
<http://www.amamax.com/inbtmiatxsld.html>  
PSU: A+GPB 350W from PCClub  
MOTHERBOARD: ASUS A7N266 Micro-ATX Motherboard  
CPU: Athlon 2200 processor  
RAM: 256K Kingston PC2100 Memory  
CPU HEATSINK:  
NORTHBRIDGE HEATSINK:  
CD/DVD-RW: Lite-On DVD  
HDD: Western Digital 180 GB  
GRAPHICS CARD: eVGA e-GeForce mx4000  
SOUNDCARD: Onboard  
TUNER CARD: (2) Hauppauge PVR-250  
REMOTE CONTROL: Hauppauge Grey that came with PVR-250

## **Appendix B: Multiple System Entertainment Configuration**

***LinHES***

## The Pamphlet of KnoppMyth

Linux Home Entertainment System or LinHES is what I called my home entertainment system. LinHES is of course based on KnoppMyth, but the setup I describe can be accomplished with any Linux distro and MythTV. My setup consists of a master and slave backend. My master backend is in my bedroom and it is used to store all recorded programs. My slave backend is in my living room. It's primary function is to entertainment visitors. Both backends are hooked up to a TV via, TV out(SVIDEO). SBE is also hooked to a Kenwood receiver w/ surround(works w/o additional tweaking!). NFS is used to share the files between the systems.

### MBE hardware:

Chaintech 7NIF2 w/ Athlon XP 2400+  
512 megabytes of RAM  
120 gigabyte hard drive  
Hauppauge PVR 350  
Hauppauge PVR 250  
DVD-ROM drive

### SBE hardware:

Asus A7N266 w/ Athlon XP 1800+  
512 megabytes of RAM  
160 gigabyte hard drive  
nVidia Geforce 4-440mx w/ TV out  
Hauppauge WinTV model 401  
AverMedia M179  
DVD-ROM drive  
2 Logitech Wingman Wireless rumblepad  
RadioShack 15-2116 universal remote

### Installation:

I performed an auto install on MBE, while SBE was installed manual (I wanted /cache

## The Pamphlet of KnoppMyth

no larger than 5 gigs). Both systems installed w/o issue all hardware was seen and worked w/o additional configuration. MBE was recently changed to R5 Alpha(auto upgrade and not ready for the average user), while SBE is running R4V3. Both are of course running MythTV 0.15.1.

Customization:

MBE:

/etc/hosts:

```
127.0.0.1    mbe.mysettopbox.tv localhost
```

```
192.168.1.91 sbe
```

Added the following to /etc/fstab:

```
sbe:/myth /mnt/sbe nfs rsize=8192,wsiz=8192,soft,nfsvers=3
```

/etc/exports:

```
/myth *(rw)
```

```
update-rc.d nfs-kernel-server defaults
```

Made a directory under /mnt called sbe and symlinked music and video to sbe/music and sbe/video.

```
mkdir /mnt/sbe
```

```
cd /mnt
```

In -s sbe/music music(Setup-Music Settings-General Settings, change the directory to hold music to /mnt/music)

In -s sbe/video video(Setup-Video Settings-General Settings change directory to hold videos to /mnt/video)

Ran mythtv-setup and change both IPs from 127.0.0.1 to my actual IP. Modified /etc/mysql/my.cnf, commented skip-networking and restarted mysql. Finally as the user

## The Pamphlet of KnoppMyth

mythtv:

```
cd ~/.mythtv
rm -fr MythVideo
ln -s /mnt/sbe/image_cache/MythVideo/ MythVideo
```

SBE:

```
/etc/hosts
127.0.0.1    localhost
192.168.1.91 sbe.mysettopbox.tv sbe
192.168.1.92 mbe.mysettopbox.tv mbe
```

Added the following to /etc/fstab:

```
mbe:/myth /mnt/mbe nfs rsize=8192,wsiz=8192,soft,nfsvers=3
```

/etc/exports:

```
/myth *(rw)
update-rc.d nfs-kernel-server defaults
update-rc.d -f mysql remove
update-rc.d -f apache remove
rm -fr /etc/cron.daily/mythtv-backend
```

Made a directory under /mnt called mbe and symlinked tv to mbe/tv, music is symlinked to /myth/music and video is symlinked to /myth/video.

```
mkdir /mnt/mbe
cd /mnt
ln -s mbe/tv tv(mythtv-setup 2nd screen, directory to hold recordings, change to /mnt/tv)
```

## The Pamphlet of KnoppMyth

Run mythtv-setup and change the first IP to the IP for SBE and the second to MBE's IP. Configure capture cards and bind input to source(configured during MBE setup). Finally as the user mythtv:

```
cd ~/.mythtv
rm -fr MythVideo
ln -s /myth/image_cache/MythVideo/ MythVideo
vi mysql.txt
```

```
DBHostName=mbe
DBUserName=mythtv
DBPassword=mythtv
DBName=mythconverg
LocalHostName=sbe
```

At this point, one can reboot boot systems or:

```
MBE:/etc/init.d/nfs-kernel-server start
SBE:/etc/init.d/nfs-kernel-server start
MBE:mount /mnt/sbe
SBE:mount /mnt/mbe
M/SBE:/etc/init.d/mythtv-backend restart
```

On the SBE: Setup-TV Settings-Playback-2nd screen, "Action on playback exit", set this to "Save position on exit". This way you can migrate watching a recorded show from one system to the next.

## **Appendix C:Supported Capture Cards**

## **Analog V4L capture card**

### **BTTV based tuners**

- 0 -> \*\*\* UNKNOWN/GENERIC \*\*\*
- 1 -> MIRO PCTV
- 2 -> Hauppauge (bt848)
- 3 -> STB, Gateway P/N 6000699 (bt848)
- 4 -> Intel Create and Share PCI/ Smart Video Recorder III
- 5 -> Diamond DTV2000
- 6 -> AVerMedia TVPhone
- 7 -> MATRIX-Vision MV-Delta
- 8 -> Lifeview FlyVideo II (Bt848) LR26 / MAXI TV Video PCI2 LR26
- 9 -> IMS/IXmicro TurboTV
- 10 -> Hauppauge (bt878) [0070:13eb,0070:3900,  
2636:10b4]
- 11 -> MIRO PCTV pro
- 12 -> ADS Technologies Channel Surfer TV (bt848)
- 13 -> AVerMedia TVCapture 98 [1461:0002,1461:0004,  
1461:0300]
- 14 -> Aimslab Video Highway Xtreme (VHX)
- 15 -> Zoltrix TV-Max [a1a0:a0fc]
- 16 -> Prolink Pixelview PlayTV (bt878)
- 17 -> Leadtek WinView 601
- 18 -> AVEC Intercapture
- 19 -> Lifeview FlyVideo II EZ /FlyKit LR38 Bt848 (capture only)
- 20 -> CEI Raffles Card
- 21 -> Lifeview FlyVideo 98/ Lucky Star Image World ConferenceTV LR50
- 22 -> Askey CPH050/ Phoebe Tv Master + FM [14ff:3002]

## The Pamphlet of KnoppMyth

- 23 -> Modular Technology MM201/MM202/MM205/MM210/MM215 PCTV, bt878  
[14c7:0101]
- 24 -> Askey CPH05X/06X (bt878) [many vendors] [144f:3002,144f:3005,  
144f:5000,14ff:3000]
- 25 -> Terratec TerraTV+ Version 1.0 (Bt848)/ Terra TValue Version 1.0/ Vobis TV  
-Boostar
- 26 -> Hauppauge WinCam newer (bt878)
- 27 -> Lifeview FlyVideo 98/ MAXI TV Video PCI2 LR50
- 28 -> Terratec TerraTV+ Version 1.1 (bt878) [153b:1127,1852:1852]
- 29 -> Imagination PXC200 [1295:200a]
- 30 -> Lifeview FlyVideo 98 LR50 [1f7f:1850]
- 31 -> Formac iProTV, Formac ProTV I (bt848)
- 32 -> Intel Create and Share PCI/ Smart Video Recorder III
- 33 -> Terratec TerraTValue Version Bt878 [153b:1117,153b:1118,  
153b:1119,153b:111a,153b:1134,153b:5018]
- 34 -> Leadtek WinFast 2000/ WinFast 2000 XP [107d:6606,107d:6609,  
6606:217d,f6ff:fff6]
- 35 -> Lifeview FlyVideo 98 LR50 / Chronos Video Shuttle II [1851:1850,1851:a050  
]
- 36 -> Lifeview FlyVideo 98FM LR50 / Typhoon TView TV/FM Tuner [1852:1852]
- 37 -> Prolink PixelView PlayTV pro
- 38 -> Askey CPH06X TView99 [144f:3000,144f:a005,  
a04f:a0fc]
- 39 -> Pinnacle PCTV Studio/Rave [11bd:0012,bd11:1200,  
bd11:ff00,11bd:ff12]
- 40 -> STB TV PCI FM, Gateway P/N 6000704 (bt878), 3Dfx VoodooTV 100  
[10b4:2636,  
10b4:2645,121a:3060]

## The Pamphlet of KnoppMyth

- 41 -> AVerMedia TVPhone 98 [1461:0001,1461:0003]
- 42 -> ProVideo PV951 [aa0c:146c]
- 43 -> Little OnAir TV
- 44 -> Sigma TVII-FM
- 45 -> MATRIX-Vision MV-Delta 2
- 46 -> Zoltrix Genie TV/FM [15b0:4000,15b0:400a,  
15b0:400d,15b0:4010,15b0:4016]
- 47 -> Terratec TV/Radio+ [153b:1123]
- 48 -> Askey CPH03x/ Dynalink Magic TView
- 49 -> IODATA GV-BCTV3/PCI [10fc:4020]
- 50 -> Prolink PV-BT878P+4E / PixelView PlayTV PAK / Lenco MXTV-9578 CP
- 51 -> Eagle Wireless Capricorn2 (bt878A)
- 52 -> Pinnacle PCTV Studio Pro
- 53 -> Typhoon TView RDS + FM Stereo / KNC1 TV Station RDS
- 54 -> Lifeview FlyVideo 2000 /FlyVideo A2/ Lifetec LT 9415 TV [LR90]
- 55 -> Askey CPH031/ BESTBUY Easy TV
- 56 -> Lifeview FlyVideo 98FM LR50 [a051:41a0]
- 57 -> GrandTec 'Grand Video Capture' (Bt848) [4344:4142]
- 58 -> Askey CPH060/ Phoebe TV Master Only (No FM)
- 59 -> Askey CPH03x TV Capturer
- 60 -> Modular Technology MM100PCTV
- 61 -> AG Electronics GMV1 [15cb:0101]
- 62 -> Askey CPH061/ BESTBUY Easy TV (bt878)
- 63 -> ATI TV-Wonder [1002:0001]
- 64 -> ATI TV-Wonder VE [1002:0003]
- 65 -> Lifeview FlyVideo 2000S LR90
- 66 -> Terratec TValueRadio [153b:1135,153b:ff3b]
- 67 -> IODATA GV-BCTV4/PCI [10fc:4050]

## The Pamphlet of KnoppMyth

- 68 -> 3Dfx VoodooTV FM (Euro), VoodooTV 200 (USA) [121a:3000,10b4:2637]
- 69 -> Active Imaging AIMMS
- 70 -> Prolink Pixelview PV-BT878P+ (Rev.4C,8E)
- 71 -> Lifeview FlyVideo 98EZ (capture only) LR51 [1851:1851]
- 72 -> Prolink Pixelview PV-BT878P+9B (PlayTV Pro rev.9B FM+NICAM) [1554:4011]
- 73 -> Sensoray 311 [6000:0311]
- 74 -> RemoteVision MX (RV605)
- 75 -> Powercolor MTV878/ MTV878R/ MTV878F
- 76 -> Canopus WinDVR PCI (COMPAQ Presario 3524JP, 5112JP) [0e11:0079]
- 77 -> GrandTec Multi Capture Card (Bt878)
- 78 -> Jetway TV/Capture JW-TV878-FBK, Kworld KW-TV878RF [0a01:17de]
- 79 -> DSP Design TCVIDEO
- 80 -> Hauppauge WinTV PVR [0070:4500]
- 81 -> IODATA GV-BCTV5/PCI [10fc:4070,10fc:d018]
- 82 -> Osprey 100/150 (878) [0070:ff00]
- 83 -> Osprey 100/150 (848)
- 84 -> Osprey 101 (848)
- 85 -> Osprey 101/151
- 86 -> Osprey 101/151 w/ svid
- 87 -> Osprey 200/201/250/251
- 88 -> Osprey 200/250 [0070:ff01]
- 89 -> Osprey 210/220
- 90 -> Osprey 500 [0070:ff02]
- 91 -> Osprey 540 [0070:ff04]
- 92 -> Osprey 2000 [0070:ff03]
- 93 -> IDS Eagle
- 94 -> Pinnacle PCTV Sat [11bd:001c]
- 95 -> Formac ProTV II (bt878)

## The Pamphlet of KnoppMyth

- 96 -> MachTV
- 97 -> Euresys Picolo
- 98 -> ProVideo PV150 [aa00:1460,aa01:1461,  
aa02:1462,aa03:1463,aa04:1464,aa05:1465,aa06:1466,aa07:1467]
- 99 -> AD-TVK503
- 100 -> Hercules Smart TV Stereo
- 101 -> Pace TV & Radio Card
- 102 -> IVC-200 [0000:a155,0001:a155,  
0002:a155,0003:a155,0100:a155,0101:a155,0102:a155,0103:a155]
- 103 -> Grand X-Guard / Trust 814PCI [0304:0102]
- 104 -> Nebula Electronics DigiTV [0071:0101]
- 105 -> ProVideo PV143 [aa00:1430,aa00:1431,  
aa00:1432,aa00:1433,aa03:1433]
- 106 -> PHYTEC VD-009-X1 MiniDIN (bt878)
- 107 -> PHYTEC VD-009-X1 Combi (bt878)
- 108 -> PHYTEC VD-009 MiniDIN (bt878)
- 109 -> PHYTEC VD-009 Combi (bt878)
- 110 -> IVC-100 [ff00:a132]
- 111 -> IVC-120G [ff00:a182,ff01:a182,  
ff02:a182,ff03:a182,ff04:a182,ff05:a182,ff06:a182,ff07:a182,ff08:a182,ff09:a182,  
ff0a:a182,ff0b:a182,ff0c:a182,ff0d:a182,ff0e:a182,ff0f:a182]
- 112 -> pcHDTV HD-2000 TV [7063:2000]
- 113 -> Twinhan DST + clones [11bd:0026,1822:0001,  
270f:fc00]
- 114 -> Winfast VC100 [107d:6607]
- 115 -> Teppro TEV-560/InterVision IV-560
- 116 -> SIMUS GVC1100 [aa6a:82b2]
- 117 -> NGS NGSTV+

## The Pamphlet of KnoppMyth

- 118 -> LMLBT4
- 119 -> Tekram M205 PRO
- 120 -> Conceptronic CONTVFMi
- 121 -> Euresys Picolo Tetra [1805:0105,1805:0106,  
1805:0107,1805:0108]
- 122 -> Spirit TV Tuner
- 123 -> AVerMedia AVerTV DVB-T 771 [1461:0771]
- 124 -> AVerMedia AVerTV DVB-T 761 [1461:0761]
- 125 -> MATRIX Vision Sigma-SQ
- 126 -> MATRIX Vision Sigma-SLC
- 127 -> APAC Viewcomp 878(AMAX)
- 128 -> DVICO FusionHDTV DVB-T Lite [18ac:db10]
- 129 -> V-Gear MyVCD
- 130 -> Super TV Tuner
- 131 -> Tibet Systems 'Progress DVR' CS16
- 132 -> Kodicom 4400R (master)
- 133 -> Kodicom 4400R (slave)
- 134 -> Adlink RTV24
- 135 -> DVICO FusionHDTV 5 Lite [18ac:d500]
- 136 -> Acorp Y878F [9511:1540]
- 137 -> Conceptronic CTVFMi v2
- 138 -> Prolink Pixelview PV-BT878P+ (Rev.2E)
- 139 -> Prolink PixelView PlayTV MPEG2 PV-M4900
- 140 -> Osprey 440 [0070:ff07]
- 141 -> Asound Skyeye PCTV
- 142 -> Sabrent TV-FM (btv version)
- 143 -> Hauppauge ImpactVCB (bt878) [0070:13eb]
- 144 -> MagicTV

## ***MJPEG capture card***

Iomega Buz

Linux Media Labs LML33/R10

Matrox G200

Miro DC10

## ***MPEG-2 encoder card***

Hauppauge PVR250

Rev1: Models 48xxx, S-Video connector only, comes with composite adapter

Rev2: Models 48xxx, separate S-Video and Composite inputs

Rev3: Models 32xxx, should have Conexant CX23416

Hauppauge PVR250MCE - (non blackbird design)

Hauppauge PVR350 - ((PVR350\_9DINPinout|Pin out for 9 pin mini-DIN))

Rev1: Model 980

Rev2: Model 990, works in ivtv-0.2.x or greater

Yuan MPG600/MPG160

Note: Revision 1.1 of this card, known as the MPG-600GR and can be identified by it's purple and not green pcb colour, is not working at this stage due to an unsupported video decoder (SAA7174).

Avermedia M179

Hauppauge Freestyle: This card acts more like a 250, but is actually closer to a 350. It has a decoder chip onboard, in addition to the memory chips that the 350 has. The major difference is that the Freestyle doesn't have the TV out port, nor does it have an IR plug. Instead, these are replaced with a Composite A/V input.

Rev1: Models 48xxx, has no IR port

Rev2: Models 32xxx, has no IR port, should have Conexant CX23416

Adaptec VideOh! DVD Media Center PCI Edition (Model AVC-2410) NOT USB VERSION - some non-standard configuration is required please refer to Card Specific Settings

Hauppauge WinTV PVR-150

## The Pamphlet of KnoppMyth

Hauppauge WinTV PVR-150MCE

Hauppauge WinTV PVR-150MCE Low-profile

Hauppauge WinTV PVR-500MCE

### **DVB DTV capture card**

- ves1x93 : Alps BSRV2 (ves1893 demodulator) and dbox2 (ves1993)
- cx24110 : Conexant HM1221/HM1811 (cx24110 or cx24106 demod, cx24108 PLL)
- grundig\_29504-491 : Grundig 29504-491 (Philips TDA8083 demodulator), tsa5522 PLL
- mt312 : Zarlink mt312 or Mitel vp310 demodulator, sl1935 or tsa5059 PLL
- stv0299 : Alps BSRU6 (tsa5059 PLL), LG TDQB-S00x (tsa5059 PLL), LG TDQF-S001F (sl1935 PLL), Philips SU1278 (tua6100 PLL), Philips SU1278SH (tsa5059 PLL), Samsung TBMU24112IMB

#### DVB-C:

- ves1820 : various (ves1820 demodulator, sp5659c or spXXXXX PLL)
- at76c651 : Atmel AT76c651(B) with DAT7021 PLL

#### DVB-T:

- alps\_tdlb7 : Alps TDLB7 (sp8870 demodulator, sp5659 PLL)
- alps\_tdm7 : Alps TDMB7 (cx22700 demodulator)
- grundig\_29504-401 : Grundig 29504-401 (LSI L64781 demodulator), tsa5060 PLL
- tda1004x : Philips tda10045h (td1344 or tdm1316l PLL)
- nxt6000 : Alps TDME7 (MITEL SP5659 PLL), Alps TDED4 (TI ALP510 PLL),

Comtech DVBT-6k07 (SP5730 PLL) (NxtWave Communications NXT6000 demodulator)

## The Pamphlet of KnoppMyth

- sp887x : Microtune 7202D
- dib3000mb : DiBcom 3000-MB demodulator

### DVB-S/C/T:

- dst : TwinHan DST Frontend

### ATSC:

- nxt200x : Nxtwave NXT2002 & NXT2004
- or51211 : or51211 based (pcHDTV HD2000 card)
- or51132 : or51132 based (pcHDTV HD3000 card)
- bcm3510 : Broadcom BCM3510
- lgdt330x : LG Electronics DT3302 & DT3303

### o Cards based on the Phillips saa7146 multimedia PCI bridge chip:

- TI AV7110 based cards (i.e. with hardware MPEG decoder):
  - Siemens/Technotrend/Hauppauge PCI DVB card revision 1.1, 1.3, 1.5, 1.6, 2.

1

(aka Hauppauge Nexus)

- "budget" cards (i.e. without hardware MPEG decoder):
  - Technotrend Budget / Hauppauge WinTV-Nova PCI Cards - SATELCO Multimedia PCI
    - KNC1 DVB-S, Typhoon DVB-S, Terratec Cinergy 1200 DVB-S (no CI support)
    - Typhoon DVB-S budget
    - Fujitsu-Siemens Activy DVB-S budget card
    -
  - o Cards based on the B2C2 Inc. FlexCopII/Ib/III:
    - Technisat SkyStar2 PCI DVB card revision 2.3, 2.6B, 2.6C
    -
  - o Cards based on the Conexant Bt8xx PCI bridge:

## The Pamphlet of KnoppMyth

- - Pinnacle PCTV Sat DVB
- - Nebula Electronics DigiTV
- - TwinHan DST
- - Avermedia DVB-T
- - ChainTech digitop DST-1000 DVB-S
- - pcHDTV HD-2000 TV
- - DViCO FusionHDTV DVB-T Lite
- - DViCO FusionHDTV5 Lite
- 
- o Technotrend / Hauppauge DVB USB devices:
  - - Nova USB
  - - DEC 2000-T, 3000-S, 2540-T
- o DiBcom DVB-T USB based devices:
  - - Twinhan VisionPlus VisionDTV USB-Ter DVB-T Device
  - - HAMA DVB-T USB device
  - - CTS Portable (Chinese Television System)
  - - KWorld V-Stream XPERT DTV DVB-T USB
  - - JetWay DTV DVB-T USB
  - - ADSTech Instant TV DVB-T USB
  - - Ultima Electronic/Artec T1 USB TVBOX (AN2135 and AN2235)
  - - Compro Videomate DVB-U2000 - DVB-T USB
  - - Grandtec USB DVB-T
  - - Avermedia AverTV DVBT USB
  - - DiBcom USB DVB-T reference device (non-public)
  - - Yakumo DVB-T mobile USB2.0
  - - DiBcom USB2.0 DVB-T reference device (non-public)
- o Experimental support for the analog module of the Siemens DVB-C PCI card
-

## The Pamphlet of KnoppMyth

- o Cards based on the Conexant cx2388x PCI bridge:
  - - ADS Tech Instant TV DVB-T PCI
  - - ATI HDTV Wonder
  - - digitalnow DNTV Live! DVB-T
  - - DViCO FusionHDTV DVB-T1
  - - DViCO FusionHDTV DVB-T Plus
  - - DViCO FusionHDTV3 Gold-Q
  - - DViCO FusionHDTV3 Gold-T
  - - DViCO FusionHDTV5 Gold
  - - Hauppauge Nova-T DVB-T
  - - KWorld/VStream XPert DVB-T
  - - pcHDTV HD3000 HDTV
  - - TerraTec Cinergy 1400 DVB-T
  - - WinFast DTV1000-T
  -
- o Cards based on the Phillips saa7134 PCI bridge:
  - - Medion 7134
  - - Pinnacle PCTV 300i DVB-T + PAL
  - - LifeView FlyDVB-T DUO
  - - Typhoon DVB-T Duo Digital/Analog Cardbus
  - - Philips TOUGH DVB-T reference design
  - - Philips EUROPA V3 reference design
  - - Compro Videomate DVB-T300
  - - Compro Videomate DVB-T200
  - - AVerMedia AVerTVHD MCE A180
  -

### ***pcHDTV DTV capture card***

Use the DVB module(s).

### ***FireWire cable box***

Any digital cable box provided by your cable company with firewire out.\put.

### ***USB MPEG-4 encoder box***

Fully supported

- Plextor ConvertX M402U
- Plextor ConvertX TV402U

Supported with a fixed resolution

- NorthQ NQ6600
- Georgia Technologies GA-VD207
- H&B TX-100
- Adlink PCI-MPG24

Supported reference boards

- “Matrix Reloaded”
- “Matrix Revolution”
- “Matrix II”
- “Star Trek”
- “PCI Voyager”
- “XMen”

### ***DBox2 TCP/IP cable box***

TCP/IP cable box