

MythTV - an Open Source PVR

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- Rugby Linux Users Group

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PVR Overview

- What's a PVR (or DVR) anyway?
- Common features
 - Digital storage
 - Pause/rew/ffw Live TV
 - Timeshifting of recordings
 - EPG
 - Scheduling - “fire and forget”
 - Multi-room

Consumer PVR Market

- Sky Digital Sky+ box
- Virgin Media V+ box
- Freeview recorders
- FreeSat recorders
- TiVo
- Windows Media Center



Consumer PVRs – good or bad?

- Good
 - Off-the-shelf and ready to go
 - Designed for “regular” end-users
- Bad
 - Proprietary – high risk of vendor lock-in
 - Cost – one-time or ongoing
 - Limited features
 - Typically not end-user upgradeable
 - No access to recorded media

“Enthusiast” PC-based PVRs

- MythTV



- SageTV

SAGETV

- VDR



- Beyond TV



- Meedio



- GBPVR

GB-PVR

Benefits of MythTV

- Open source and extremely stable
- Continually developed
- Includes PVR features not found in other products
- Runs on Linux/MacOS X/Windows*
- Use of open formats and protocols – C++, SQL, QT, OpenGL, MPEG2/4
- Provides access to all of your media
- Supports analog / DVB-T/S/C/ Sky/Virgin TV
- Supports HDTV out of the box if available

MythTV Core Features

- Client/server design – very expandable
- Fully featured PVR (pause/rew/fwd) Live TV
- Timestretch
- Multi-rec for DVB-T/S/C devices
- Picture in picture
- Simultaneous recordings limited only by hardware – mix and match capture cards
- No limit on total number of recordings
- Individual settings for recording/playback
- Simple/advanced scheduling of recordings

MythTV Core Features (cont)

- 7 day EIT EPG listings for Freeview and FreeSat, 14 day listings from Radio Times
- Schedule recordings over the web
- Transparent commercial detection
- Transcoding of recordings for playback on mobile devices

MythTV Timeline

- Started in April 2002 by Isaac Richards
- Current stable version: 0.21-fixes
 - released 2008-03-08
 - mythtv.org/wiki/index.php/Release_Notes_-_0.21.1
- 0.22 likely to be released in next few months when QT4 migration complete
- SVN access via cvs.mythtv.org/trac
- Fairly erratic release schedule!

MythTV modules

- “Core”
 - TV/radio recording/playback/scheduling
- Official Plugins
 - Video Library and DVD player
 - Music Library
 - Picture Library
 - ZoneAlarm integration
 - VOIP
 - MAME arcade games support
 - Weather
 - RSS news reader

Unofficial MythTV plugins

- Many new plugins in development
 - mythtv.org/wiki/index.php/Unofficial_Plugins
- MythStream (IPTV playback)
- MythFM
- MythRecipe
- MythStreamTV (MythWeb streaming)
- Not distributed with MythTV (yet)

MythTV-centric Distros

- Provide a quick and easy way to test out MythTV without worrying about software
- Support most hardware out-of-the-box with minimal end-user configuration
- KnoppMyth (Knoppix derived)
- MythDora (Fedora derived)
- MythBuntu (Ubuntu derived)
- MiniMyth (EPIA/netboot machines)

MythTV Dependencies

- A typical MythTV installation will use:
 - MySQL
 - Xv/XvMC/OpenGL video
 - ALSA or OSS audio
 - LIRC for remote controls
 - XMLTV/EIT for listings
- Get the basics working first, then install!
- If compiling, be sure to check which libraries and headers are required (freetype, LAME, qt, Xv, XvMC, libGL, LIRC etc)

Installing MythTV binaries

- No compiling required
- Upgrade easily via package manager
- At mercy of packagers as to which version is available and how often -stable is updated
- Some packagers will make available both stable (0.21-fixes) and unstable (trunk) builds
- Most distros have MythTV binaries available

Compiling MythTV source

```
$ svn co http://svn.mythtv.org/svn/branches/release-0-21-fixes /usr/src/mythtv/
```

```
$ cd /usr/src/mythtv/mythtv/
```

```
$ ./configure --prefix=/usr/local/
```

```
$ make
```

```
# make install
```

```
$ cd /usr/src/mythtv/mythplugins/
```

```
$ ./configure --prefix=/usr/local/
```

```
$ make
```

```
# make install
```

```
$ cd /usr/src/mythtv/myththemes/
```

```
$ ./configure --prefix=/usr/local/
```

```
$ make
```

```
# make install
```

There are many configure options for MythTV, use './configure --help' for details

MythTV programs

- mythtv-setup
- mythbackend
- mythfrontend
- mythfilldatabase
- mythcommflag
- mythtvosd
- mythwelcome
- mythlcdserver
- mythtranscode

- MythWeb

mythtv-setup

- Configures initial MythTV setup so that mythbackend/frontend can run
- Database/general settings
- Capture cards
- Video sources/listings
- Input connections

mythbackend

- The server element of a MythTV setup
- Usually run as a daemon
- Responsible for:
 - scheduling
 - listings retrieval
 - recording
 - transcoding
 - commercial flagging
 - co-ordinating with slave mythbackend machines

mythfrontend

- The key client in a MythTV setup
- Full screen GUI (can be windowed)
- OpenGL/Qt interface
- Themeable

- Responsible for
 - playback of Live TV and recordings
 - viewing EPG
 - scheduling of future recordings
 - access to other media via plugins
 - large amount of FE/BE configuration

mythfilldatabase

- Supports importing TV listings data and channel icons from XMLTV and SchedulesDirect (US)
- Typically runs transparently by mythbackend once a day (can script manually via cron)
- Used to clean out listings data periodically for all sources of data

MythWeb

- PHP-based MythTV client which runs on webserver
- Provides access to EPG
- Creation and editing of recording schedules
- Download and streaming of recordings, videos and music
- Watch recordings on-the-fly via Flash
- Weather/gallery modules
- Status information
- Access/update MythTV settings

mythcommflag

- Responsible for commercial detection and flagging on recordings (not so usable in the UK currently) - occurs transparently
- Can rebuild damaged seek information for existing recordings – manual process

mythtvosd

- Allows information to be overlaid on screen when watching LiveTV/recordings/videos
- Scriptable
- Example: displaying CLI data from Asterisk when phone rings
- Do not work when setting in menu

Themes

- mythfrontend is skinnable via official and a growing number of user-contributed themes
- Themes control appearance of
 - application GUI
 - on-screen display (OSD) during playback
 - menu content and ordering
- Regular (4:3) and widescreen (16:9) themes available
- XML-based structure

Popular Themes

- MythCenter



- Blue



- Iulius



- Pearody



MythTV Recordings

Select a recording to view:

That '70s Show
The Agency

All Programs

CSI: Miami
Frank Herbert's Children of D...
Still Standing

The Agency - "Spy Finance"	4/12	10:00 pm
That '70s Show - "No Quarter"	4/2	8:00 pm
Frank Herbert's Children of D...	3/19	1:00 am
Frank Herbert's Children of D...	3/18	1:00 am
Frank Herbert's Children of D...	3/17	1:00 am
CSI: Miami - "Dispo Day"	3/10	10:00 pm
Still Standing - "Still Excelling"	3/10	9:30 pm
That '70s Show - "Your Tim..."	1/29	8:00 pm
CSI: Miami - "Ashes to Ashes"	1/13	10:00 pm

The Agency

"Spy Finance"


Airdate: Sat Apr 12, 10:00 pm - 11:00 pm

Channel: 7

Description: Gage and Quinn must deal with an organized crime leader involved with an al-Qaida cell.



MythTV EPG




Law & Order

"Kid Pro Quo"








Wed Apr 30, 10:00 pm - 11:00 pm

Several people are suspects when the head of admissions for a private school is killed.



10:23 pm

Not Recording

	Wed	10:00 pm	10:30 pm	11:00 pm	11:30 pm
 70 FX		The World's Worst Driver...		The Practice (Crime)	
 73 TRAV	<	World Poker Tour (Travel)		Top Ten Predators Up Clo...	
 3 WKYC		Law & Order (Crime)		Channel 3 Ne...	The T... >
 4 WUAB		Action News at Te...	Sp...	Seinfeld () 	Seinfeld () 
 5 WEWS	<	...	Extreme Makeover (M...	Newschanne...	Nightlin...

MythMusic

- Rip and play MP3/OGM/FLAC audio
- Album art
- Create customised playlists



MythVideo

- Option of using mplayer, xine or the MythTV internal player
- IMDB cover/description support

Airplane!
Directed by Jim Abrahams Year: 1980



Plot:
An airplane crew takes ill. Surely the only person capable of landing the plane is an ex-pilot afraid to fly. But don't call him Shirley.

Rated:
USA:PG

Runtime:
88 minutes

Use the left and right arrows

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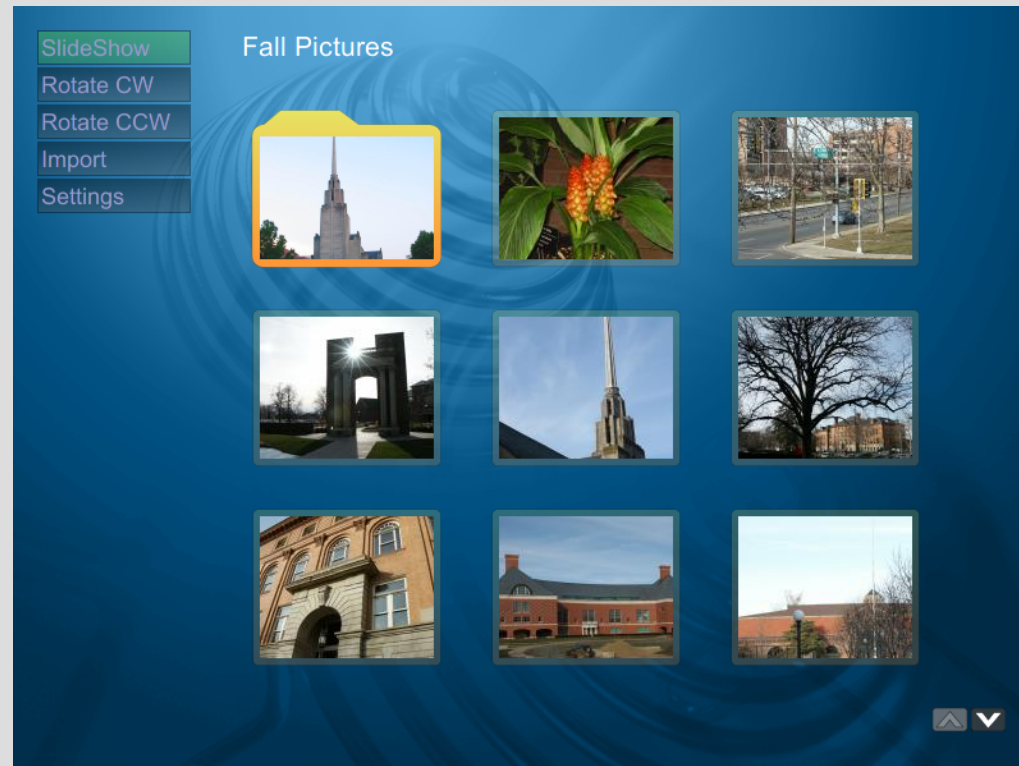


MythDVD

- Play, rip and transcode DVDs
- Can use internal MythTV playback to get access to PVR functions (timestretch etc)
- Can use a custom player if required
- libdvdss required for commercial DVDs
- No Blu-Ray or HD-DVD support

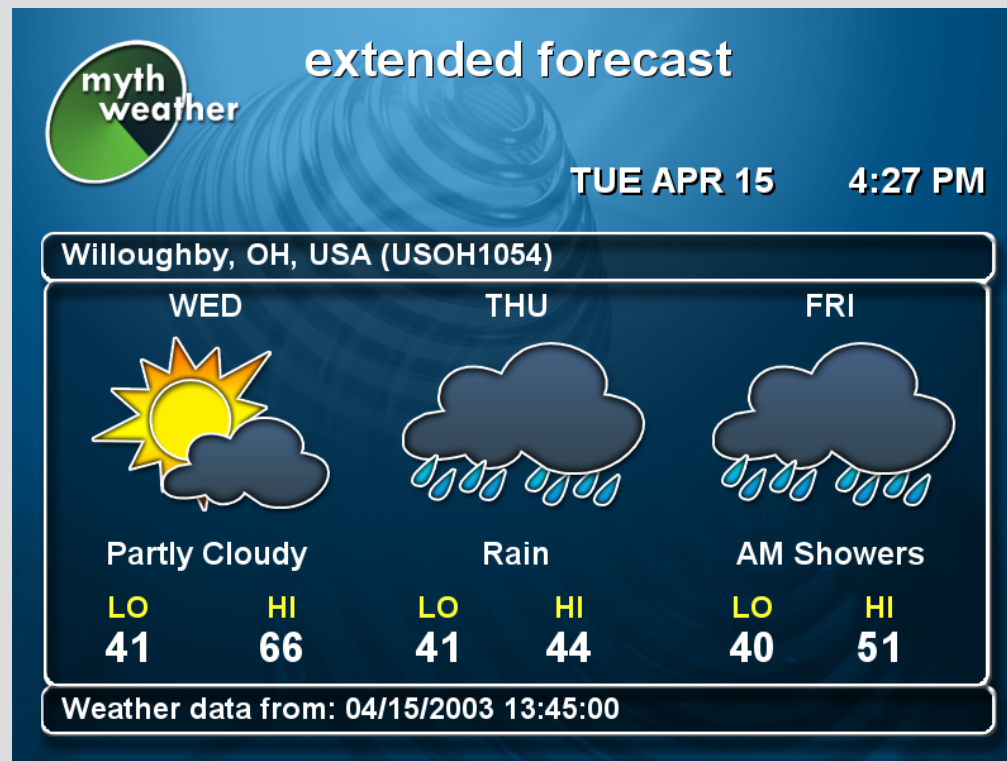
MythGallery

- Access your image collection
- Slideshow and EXIF support



MythWeather

- Provides current and 3-day weather conditions from the BBC



MythGame

- MAME, NES, SNES and other games
- Joystick support

Platform / F...	Magical Drop III
Puzzle	Money Puzzle Exchanger / Money Idol Ex...
Puzzle / Drop	Pop 'N Pop (Japan)
Puzzle / Toss	Pop 'N Pop (World)
Quiz / Japan...	Puzzle Bobble 4 (Japan)
Shooter / Fl...	Puzzle Bobble 4 (US)
Shooter / W...	Puzzle Bobble 4 (World)
	Puzzle De Pon! R!

Pop 'N Pop (World)	
System:	Mame
Year:	1997
Genre:	Puzzle / Toss



MythWeb

- Online PHP application for scheduling and accessing recordings, and playback of video and music

The screenshot displays the MythWeb interface. At the top left is the 'mythTV' logo. To its right is a quote: "I am becoming more and more convinced that intellectual property is on a collision course with personal liberty." Below the quote is a navigation menu with links for 'MythTV', 'MythMusic', 'MythVideo', and 'Settings', followed by a search box and a 'search' button. A 'Go To:' label is positioned above the search box. Below the navigation menu is a breadcrumb trail: 'MythTV: Listings | Movies | Recording Schedules | Scheduled Recordings | Recorded Programs | Backend Status'. The current date and time are shown as 'Fri, Mar 26, 08:32 PM'. The main content area shows 'Currently Browsing: Fri, March 26, 2004, 8:30 PM' and a 'Jump to:' section with dropdown menus for 'Hour: 08:00 PM' and 'Date: Fri, Mar 26', and a 'Jump' button. Below this is a grid of program listings. The grid has columns for time slots from 08:30 PM to 11:15 PM. The rows represent different channels: 2 NWCN, 3 KWPX, 4 KOMO, 5 KING, 6 KONG, 7 KIRO, and 8 DSCP. Each cell in the grid contains the program name and its start time. For example, at 8:30 PM on channel 2, 'Evening Magazine' is shown. At 9:00 PM on channel 2, 'NWCN: The 9 O'Clock News' is shown. At 9:30 PM on channel 2, 'Northwest Sports Tonight' is shown. At 10:00 PM on channel 2, 'Northwest News Tonight' is shown. At 10:30 PM on channel 2, 'Northwest News Tonight' is shown. At 10:45 PM on channel 2, 'Gardening With Ciscoe' is shown. At 11:00 PM on channel 2, 'Gardening With Ciscoe' is shown. At 11:15 PM on channel 2, 'Gardening With Ciscoe' is shown. At 8:30 PM on channel 3, 'Garbo Talks (1984, PG-13, **½)' is shown. At 9:00 PM on channel 3, 'Garbo Talks (1984, PG-13, **½)' is shown. At 9:30 PM on channel 3, 'Garbo Talks (1984, PG-13, **½)' is shown. At 10:00 PM on channel 3, 'Garbo Talks (1984, PG-13, **½)' is shown. At 10:30 PM on channel 3, 'Diagnosis Murder: Being of Sound Mind' is shown. At 11:00 PM on channel 3, 'Diagnosis Murder: Being of Sound Mind' is shown. At 11:15 PM on channel 3, 'Diagnosis Murder: Being of Sound Mind' is shown. At 8:30 PM on channel 4, 'Married to the Kellys: The Plan' is shown. At 9:00 PM on channel 4, 'Hope & Faith: The Wedding (Rerun)' is shown. At 9:30 PM on channel 4, 'Life With Bonnie: Don't Stress, Express' is shown. At 10:00 PM on channel 4, 'The D.A.: The People vs. Patricia Henry' is shown. At 10:30 PM on channel 4, 'The D.A.: The People vs. Patricia Henry' is shown. At 11:00 PM on channel 4, 'KOMO 4 News' is shown. At 11:15 PM on channel 4, 'KOMO 4 News' is shown. At 8:30 PM on channel 5, 'Dateline NBC' is shown. At 9:00 PM on channel 5, 'Dateline NBC' is shown. At 9:30 PM on channel 5, 'Dateline NBC' is shown. At 10:00 PM on channel 5, 'Law & Order: Criminal Intent: Stray (Rerun)' is shown. At 10:30 PM on channel 5, 'Law & Order: Criminal Intent: Stray (Rerun)' is shown. At 11:00 PM on channel 5, 'KING 5 News' is shown. At 11:15 PM on channel 5, 'KING 5 News' is shown. At 8:30 PM on channel 6, 'NBA Basketball: Denver Nuggets at Seattle Sonics' is shown. At 9:00 PM on channel 6, 'NBA Basketball: Denver Nuggets at Seattle Sonics' is shown. At 9:30 PM on channel 6, 'NBA Basketball: Denver Nuggets at Seattle Sonics' is shown. At 10:00 PM on channel 6, 'KING 5 News at 10' is shown. At 10:30 PM on channel 6, 'Northwest Sports Tonight' is shown. At 11:00 PM on channel 6, 'EXTRA' is shown. At 11:15 PM on channel 6, 'EXTRA' is shown. At 8:30 PM on channel 7, 'College Basketball: Duke vs Illinois' is shown. At 9:00 PM on channel 7, 'Paid Programming' is shown. At 9:30 PM on channel 7, 'Paid Programming' is shown. At 10:00 PM on channel 7, 'Access Hollywood' is shown. At 10:30 PM on channel 7, 'Entertainment Tonight' is shown. At 11:00 PM on channel 7, 'KIRO 7 E.W. News at 11PM' is shown. At 11:15 PM on channel 7, 'KIRO 7 E.W. News at 11PM' is shown. At 8:30 PM on channel 8, 'The Repossessors 2' is shown. At 9:00 PM on channel 8, 'American Chopper: Tool Bike 1' is shown. At 9:30 PM on channel 8, 'American Chopper: Tool Bike 1' is shown. At 10:00 PM on channel 8, 'American Hot Rod: Alumatab 5' is shown. At 10:30 PM on channel 8, 'American Hot Rod: Alumatab 5' is shown. At 11:00 PM on channel 8, 'The Repossessors 2' is shown. At 11:15 PM on channel 8, 'The Repossessors 2' is shown.

MythNews

- News reader with RSS/ATOM feed support



The screenshot displays the MythNews news reader interface. On the left, a list of news sources is shown, with 'Arstechnica' selected and a right-pointing arrow. The main area on the right shows a list of news items, with the item 'Kodak cutting film camera sales in the West' highlighted in green. Below the list, there are two sets of up/down arrow icons. At the bottom, a detailed view of the selected article is shown, including the title 'Kodak cutting film camera sales in the West', the text 'Eastman Kodak has announced that they will no longer be selling film-based cameras in the US, Western European, and Canadian markets.', and the update information 'Updated Wed Jan 14 09:20 PM'. The 'MythNews' logo is visible in the bottom left corner of the interface.

Arstechnica >	Judge rules Lindows-backed refund site invalid
BSD Today	Internet savvy more akin to anti-boob tube man than geeks
Bureau 42	Sony beefs up the mini-disc, finally
CNN	National Geographic tries digital photography
CNN Europe	Kodak cutting film camera sales in the West
Daemon News	The Internet gives a voice to Death Row, but not everyone'...
desktopian.org	The answer to video piracy... not quite.
dot.kde.org	Et Cetera: bu-bu-bu-baby production complete, commander

Kodak cutting film camera sales in the West

Updated
Wed Jan 14
09:20 PM

Eastman Kodak has announced that they will no longer be selling film-based cameras in the US, Western European, and Canadian markets.

The good, the bad, and the ugly

- The Good
 - Stability - dedicated development team
 - Integrated TV/video/music support in one box
 - F/OSS – you can scratch that itch
- The Bad
 - Hardware support – make sure it's supported
 - Configuration – option-overload
 - Recordings preferred Live TV
 - Core vs plugins look and feel is not common
 - XMLTV channel configuration can take time

Further Information

- MythTV homepage – mythtv.org
- MythTV wiki – mythtv.org/wiki/
- mythtv-users mailing list
 - mythtv.org/cgi-bin/mailman/listinfo/mythtv-users
- [#mythtv-users](https://freenode.net) on freenode.net

Real world information

- DVB-T/S recordings ~ 1-2 GiB/hr
- Hardware MPEG2 recordings ~ 2 GiB/hr
- A PIII-500MHz will play back MPEG2 video
- HDTV requires a fast CPU and benefits from XvMC support. FreeSat HD very CPU heavy.
- I find Radio Times listings data preferable to EIT data where available, but it requires a net connection

Hints

- Capture cards
 - For hardware MPEG2 capture, I like the Hauppauge PVR-x50 cards for capturing from Sky/Virgin Media
 - For DVB-T, I use a mixture of K-World and Hauppauge single and dual tuner cards
- Video cards
 - Nvidia FX5200 cards are recommended
 - ATI were to be avoided, but are improving
 - Intel on-board video is most usable

Hints (cont)

- Filesystems
 - XFS/JFS partitions recommended for storage
- Motherboards
 - VIA chipsets have been known to cause issues
- Audio
 - Onboard is fine. I feed SPDIF into a receiver
- Remotes
 - I use a Sky Navigator – but LIRC support all remotes if you have a favourite

Hints (cont)

- Networking
 - 802.11g is the minimum for wireless frontends
 - Wired 100Mbps is fine, Gigabit even better
- Database
 - Run the `optimize_mythdb.pl` script via cron to keep database in good order
 - Upgrades are one-way, so keep backups

Interested?

- Things to think about if you're interesting in trying out MythTV:
 - How do I currently get my TV signal?
 - What sort of display will I be using?
 - Will I want to playback HDTV?
 - Where do I want to watch TV?
 - How much TV do I watch?
 - How much Linux experience do I have?
 - If you want to run trunk, you really must read the -dev and -commit lists

Questions?

(Screenshots taken from mythtv.org)