LINUX VOICE TUTORIAL

GET A LINUX-BASED MEDIA CENTRE WITH OPENELEC

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Now that version 5.0 is here, there's never been a better time to install this award-winning Kodi-based media player.

WHY DO THIS?

- Install, configure and use the best Linux-based movie, music and photo viewer you can connect to your television.

TOOLS REQUIRED

- A low-powered PC, a Raspberry Pi or an ARM-based system such as the Matrix TBS 2910. You'll also need a 1GB USB stick and some storage or media files accessible from a network. The system also works best when connected to a television.

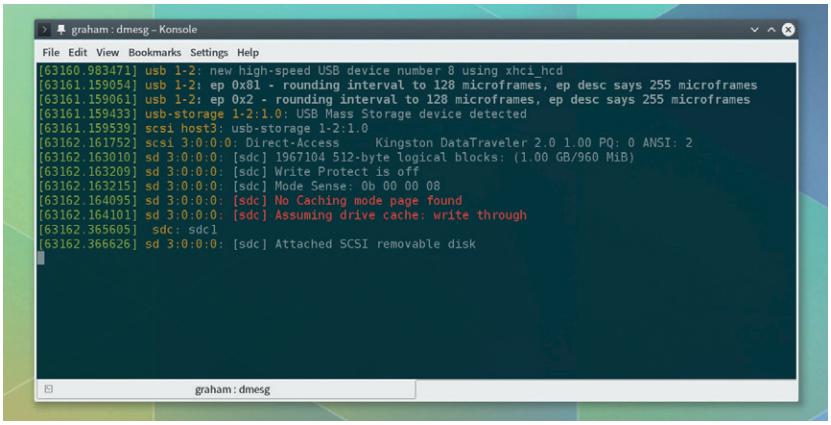
There are many distributions designed to deliver the ultimate multimedia experience to your living room. Even devices like Google's Chromecast are trying to muscle in on the action. But our favourite is a tiny yet brilliantly constructed distribution called OpenELEC, and version 5.0 has just been released, giving us the perfect excuse to write a guide on getting the most out of it.

Unlike the vast majority of distributions, including those designed for media playback, OpenELEC has one purpose and one purpose only – it's a distribution designed to run a single application, *Kodi*. *Kodi* is the television-recording, music-playing, video-managing, plugin-hosting media monster that used to be called *XBMC*. And the best thing about OpenELEC is that it's built from scratch to cut everything out that isn't absolutely necessary for running *Kodi*. That means it's not a good choice if you want to install other things alongside *Kodi*, but it's perfect if you want to get the best out of whatever diminutive hardware you want to connect to your television and amplifier. It has support for Nvidia, AMD, Intel and Broadcom hardware decoders typically found in embedded chipsets, for example, and runs brilliantly on low-powered Atom, Fusion systems and the Raspberry Pi, as well as just about any PC from the last 10 years.

1 CREATE THE INSTALLATION MEDIUM

Just because OpenELEC runs well on all these platforms doesn't mean you can't install it on a normal PC, and the install instructions for both are very similar. To prove this, we're going to include instructions for installing them both. After installation is out of the way though, OpenELEC behaves almost identically on whichever platform you choose, whether that's a PC or a Raspberry Pi. To get started, go to the download page at **http://openelec.tv**. If you're going to install on a PC, download the tar version of the generic build – 64-bit for a modern system, or 32-bit for older systems. 32-bit is being deprecated for the next major release of OpenELEC, which is worth considering if you build your installation with other hardware. We'd recommend grabbing the equivalent tar version if you're installing onto a Raspberry Pi too. At the time of writing, this file is called **OpenELEC-RPi.arm-5.0.0.tar**.

As OpenELEC typically installs via a USB stick, you'll need to make sure you run the installer against the correct device.



OpenELEC downloads look different to those for typical distributions, as they take the form of a tar file or as a device image (**.img**). This is because the installation medium is assumed to be an external USB stick or SD Card, rather than the antiquated ISO of optical media. This is only viable because OpenELEC is so small – 146MB for the generic PC version, and 105MB for the Raspberry Pi images. That means you only need a small USB thumb drive or card (for the Pi) to fit the installer. We opted for the tar file because they're easier to install onto your USB stick or SD Card, but you'll need to extract the contents of the tar archive first, either from your desktop or by typing **tar xvf filename** on the command line. The tar file itself contains a few scripts, one of which will format and install all the necessary files automatically.

Running this installer against an external device will require us to run the gauntlet of making sure you're copying files to the correct device identifier and not your PC's hard drive. If you end up copying files to the hard drive by mistake, you will lose data, so it's important to get this part correct. We'd recommend opening up the command line and typing **dmesg -w**. This will open the last few entries from your system log and automatically display further messages as they appear. If you now insert your USB thumb drive or SD card, you'll see the system update to accommodate the new device, hopefully outputting something similar to the following in the system log:

```
[63162.365605] sdc: sdc1
```

This is telling us that the new device is called **sdc** (along with a single partition on this device called

sdc1), and we're going to use this device as the destination for the OpenELEC installer. Back on the command line, press Ctrl+C to escape from **dmesg** and switch to the untarred OpenELEC folder. Be warned, the following command will erase whatever is on **sdX** and replace it with either the OpenELEC installer for PCs, or the full installation for the Raspberry Pi, so you must make sure you replace **sdX** with the correct device name from the output of **dmesg**. Here are the commands for either the PC installer or the Raspberry Pi:

```
# FOR GENERIC PCS
sudo ./create_installstick /dev/sdX
# FOR RASPBERRY PI
sudo ./create_sdcard /dev/sdX
```

As we're using **sudo**, you'll be first asked for your user password. (Switch to your root account if your distro doesn't use **sudo**.) The installer should finish within seconds; if you get an error complaining that there's no **mkfs.vfat** tool installed, you'll need to install your distribution's equivalent to the **dosfstools** package first and try again. PC users will now need to navigate a brief installation step, while Raspberry Pi users move directly to the OpenELEC startup wizard.

2 RUNNING THE INSTALLER ON A PC

Now that the installer has itself been installed onto your USB stick you now need to boot your OpenELEC machine off this. Most will do this automatically, but you may need to use your BIOS boot menu to choose the USB device, or enable USB booting from the BIOS. The sign of success is the MAIN MENU screen, from which you get to select between five options. Choose option 1 – Quick Install of OpenELEC.

The next step will ask you for a drive to install to. Be warned – the installer is going to overwrite the drive and remove whatever might have been there before. You're next asked whether SSH should be enabled from the start, and we'd recommend saying 'Yes' before you're finally warned twice more than all data on your chosen storage medium is going to be overwritten. The installer only takes a few moments to copy over 100MB of files before you're returned to the previous menu, with no indication of whether the process has been a success. Select 'Reboot' to find out. With a bit of luck, you'll soon be presented with the OpenELEC Welcome screen and startup wizard.

The startup wizard is as simple as clicking past a few questions. If you're using a wireless connection, you'll need to configure the access point settings, and Raspberry Pi users might want to enable SSH and/or Samba from the fourth step. This will take a few moments as the additional packages are installed. After that, you'll be dropped to the default XBMC/*Kodi* side-scrolling interface, from where you can now start using your new media player.

If you've used *Kodi*/*XBMC* before, the experience from OpenELEC is identical. But OpenELEC also includes its own configuration panel which is integrated into *Kodi*'s own settings menu. You can get to this by going to the 'System' menu option and cursoring down to the 'OpenELEC' submenu option. Most importantly, and a huge advantage for OpenELEC users, is that you can update both *Kodi*and the OpenELEC distribution from the first settings page. This option is set to manual by default, but you can switch this to automatic so that updates are installed without you needing to check manually.

3 REMOTE CONTROL

For installation and testing, we're assuming you've got a keyboard connected to your media device. This is a good idea, because it's much easier to enter IP addresses and network share details when you can type them on a QWERTY keyboard. But a keyboard isn't going to be too family-friendly, which means at some point you'll need to disconnect the keyboard and configure a remote control. If you've got an Android phone or tablet, the easiest option is to use the official app. Although it's still called *XBMC Remote* and hasn't been updated for a while, it's free and works well. Before it will work with your *XBMC* installation, you need to make sure 'Allow control of Kodi via HTTP' is enabled in the Webserver page of the configuration panel, then add the IP address of your OpenELEC installation to the *XBMC* app.

You can get the IP address by going to the OpenELEC Specific configuration panel and selecting the 'Connections' page. The address will be listed on the right, and you'll need to use the menu in the Android app to add the new client. You'll also need to make sure your router gives the same IP address to

With a generic USB infrared receiver, remote controls such as those for *Windows Media Centre* will work perfectly, or you could use the free Android app.

your media centre each time it boots, otherwise your remote or any other service you add to the setup, won't find the installation. Now when you go back to the remote app, you'll be able to navigate around *Kodi* using your phone just as you would with a typical infrared remote.

The final option we'd recommend is the best, and that's to configure a real remote. For this to work, you'll need a cheap infrared receiver (you could even make your own using the GPIO pins of a Raspberry Pi). The software that accepts keypresses and translates them into codes that Kodi can understand is called *Lirc*. OpenELEC installs and pre-configures *Lirc* to work with a few popular remotes out of the box, and that's what we'd recommend doing to get started as quickly as possible, using a Logitech Harmony remote, for instance, or a *Microsoft Windows Media Centre* remote, both of which will work without further configuration.

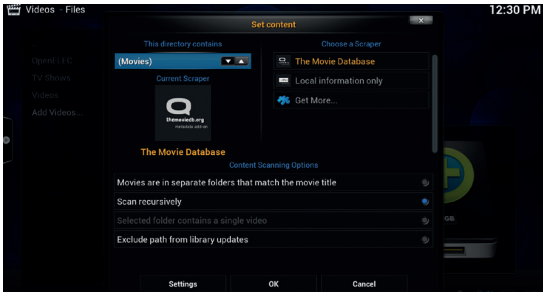
4 PLAYING MEDIA

The quickest and easiest way to celebrate your installation success is to watch a film, listen to some music or browse some photos, and the easiest way to do any of these is by putting your files onto a USB stick and connecting this to your new media centre. *Kodi* should offer you a choice of 'Mounted Removable Hard Drive' which you can access by cursoring across to Video playback, to choose one media format, and selecting files. This opens *Kodi*'s file requester. The first time you run this you'll be reminded that important sources are hidden on the right of the display. When this window is closed, you should see your USB device listed, and selecting this will display the list of media files *Kodi* has detected. Playback is as simple as selecting one and pressing Enter. Use the keyboard shortcuts to control playback and return to the main GUI.

But for most devices, playing media off the network is more useful than accessing files on local storage, and *Kodi* is brilliant at doing this. Instead of selecting the storage device from the file requester, select the 'Add' button (whether you're wanting to add videos or music). This will open the 'Add Source' requester. Pressing 'Browse' will open a share window listing all the protocols *Kodi* currently speaks, including direct connections to some hardware, such as HDHomerun devices and network shares. To add a SAMBA folder being shared on your network, for example, choose the 'Windows Share (SMB)' option. The window will update to display any detected share networks, from where you'll be able to add the folder you're looking for. Finally, add a username and password if you've protected the share on the network and make sure you select 'Remember For This Path' if you don't want to go through the process again. To add the share, tab over to the 'OK' button on the right, give the share a name and select OK again. A final window called 'Set Content' will appear, and if you select what kind of content your folder contains, *Kodi* will download covers and other details for your media.

LV PRO TIP

If you want an even easier Raspberry Pi installation method, OpenELEC can also be installed from *NOOBS*.



***Kodi* can scan local and remote collections of files, but you'll need to add each source manually.**

Media visualisation

Now when you go to your media, you'll be able to go through the 'Library' option and select the share you've just added. To be able to see this content, you need to switch from the file list view to one of the image views. With movies, for instance, press the left cursor to open the view options and press Enter with the 'View' option selected. This will switch between the various viewing modes. 'Thumbnail' will show movie covers, for example, whereas 'Poster Wrap' lines up every film cover on a long horizontal line, a little like the Netflix user interface.

Other modes include online film ratings and even fan art, so it's worth experimenting with whatever works best. If you don't like having to navigate through the title or genre list before getting to your content, you can disable this option from the Library page of *Kodi*'s Settings menu, which we'd recommend if you've only got a relatively small library. The same facilities are offered for your music collection too.

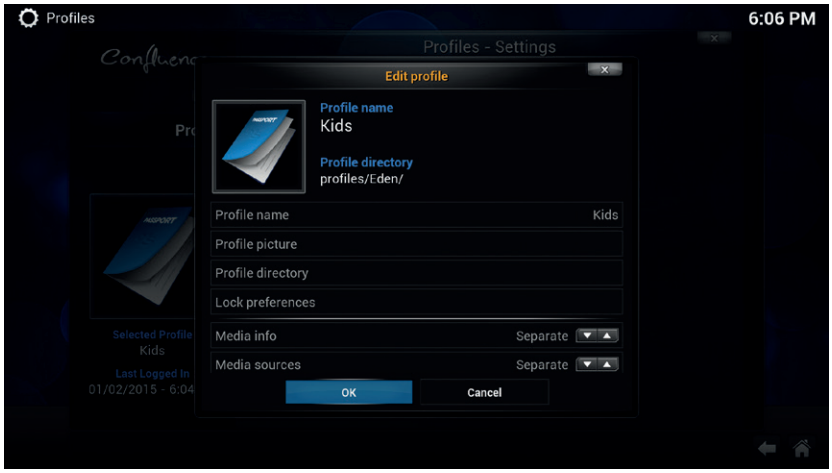
5 PARENTAL CONTROL

Often, younger members of your family are going to use your media centre and you don't necessarily want them having complete access to your media library. While there are no specific parental/content controls over who can access your media, or restricting media to certain age ranges, there are a few features that will restrict access in much the same way. The most useful of these is Profiles. Profiles are created by going to the System > Profiles submenu. A Master user is created by default, and you simply select 'Add Profile' to create a new one. The two important options are to set 'Media Info' and 'Media Sources' to

Separate. This will force you to add separate media sources for the new profile through the Music and Video menus. To switch to a new profile, go down to the power button icon at the bottom of the display and select the 'logout' option. This will re-load *Kodi* with the new access permissions.

Place content for this profile in a subdirectory of the main content folder and add this as a source. The profile's user won't be able to access the other files, yet the master user will still be able to if the 'Recursively Scan' option was enabled when you added the source. After doing this, go back to the profiles editor and change the 'Media Info' and 'Media Sources' options to 'Separate (locked)' which means the profile user can't add their own content or sources.

Of course, the profile user is still able to edit their profile themselves, and the solution to this is to create a master lock. A master lock can be used to block access to everything, using either a button combination of a pin to unlock access to the master account so that changes can be made. This can be done from your new user's profile page by selecting the 'Lock Preferences' option. If you don't want to block content but want to block the ability to change settings, you can even do the same with the master account profile. Selecting this option opens another window that first lists what kind of block you'd like to use followed by the various elements of *Kodi* you can block. As a minimum, you might want to block programs & scripts, the file manager 'All' settings and the add-on manager. Locking the movies, photos and music windows locks access to the content itself, other than the titles that are listed as recently added. This could be useful if, rather than create different folders for your media, you started playback of one film and locked access afterwards.



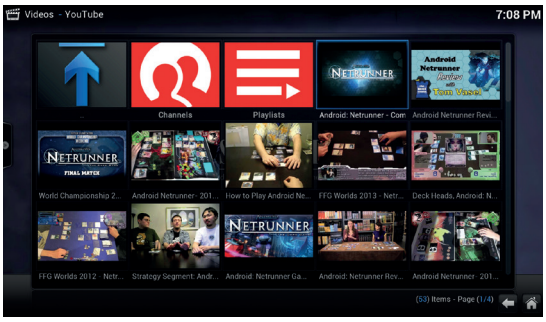
There's no access control based on age suitability of content, but you can create profiles with access only to specific media content

6 PLUGINS

We've kept OpenELEC and *Kodi*'s best feature until last, and that's the way you can extend its capabilities with plugins. For photos, videos and music, you can access content-specific plugins from the 'Addons' submenu that appears when you select the content type. But each usually accesses the same plugin list, as does the Addons menu that opens from the Settings page. To install one, just select and press Enter. The addon will download and install. Some plugins not connected may need to be configured, and this is accomplished by selecting the plugin again and filling out whatever settings are required.

Adding one of these, such as the YouTube addon from Videos, will normally create a new menu entry to the 'Add-Ons' menu, but this does depend on what each plugin is doing. Selecting a plugin and pressing the I key will open the configuration panel for an add-on even if nothing was required when it installed. With YouTube, for example, you can set the quality of playback or the cache size.

Despite the long list of plugins that can be installed with no further configuration, there are plenty of others that can be installed with a little manual intervention. They're normally not included for fear of instability or because they may have some geographical restrictions, and the iPlayer plugin is a good example of this. It enables you to access all of the BBC's streaming content from your OpenELEC media centre but it will need to be downloaded and installed manually. Fortunately, this is almost as easily accomplished as installing bundled plugins. Grab the latest release of the plugin as a Zip file (see **kodi.wiki** for the link), place this file onto a USB stick and connect this to your OpenELEC box. To install from the Zip file, go to the 'Get More' add-ons link, and rather than scrolling through the list of available plugins, select the '..' symbol that represents going up a folder, first to take you to all add-ons and then to the global add-ons menu. From here you'll be able to select 'Install From Zip File' and from the requester that appears, select your USB stick and navigate to your downloaded plugin. It will then install and configure itself just like any other plugin.



Plugins can be used to add audio and video sources, including YouTube and even iPlayer and Spotify from externally installed scripts.

LV PRO TIP

If you enable SSH on OpenELEC, you can connect remotely to your media centre using the default username of 'root' with a password of 'openelec'.

Graham Morrison wasted his youth configuring *MythTV*. He thinks *Kodi* is the best thing since Jean Michel Jarre.