The Lazy Guide to Installing Knoppix on a USB Key

By *eco2geek*
Created *28/03/2007 - 8:30am*
Submitted by eco2geek on Wednesday 28th of March 2007 08:30:04 AM Filed under Howtos [1]

Knoppix [2], the famous live Linux CD that practically started the live CD trend, needs no introduction to most people. One of the things that's so great about it is that you can take it with you and boot to a familiar Linux environment on almost any modern computer, without touching the OS that's already installed on it.

Of course, it can be even **more** portable when it runs entirely off of an inexpensive USB key. So let's install it to a 1 GB USB key, and create a persistent home directory in which to store files. Only let's do it the lazy way, and keep use of the command prompt to a bare minimum.

You will need a copy of the latest Knoppix CD [3] (v5.1.1 as of this writing) and, of course, a 1 GB USB key. If there's any data on that key you want to keep, save it before starting, because the key's going to get repartitioned (and reformatted) and any existing data will get wiped out.

A note about the mysterious art of booting from USB keys. Some computers can do it, and some can't. (Now that was a really technical statement, wasn't it?) The newer the computer's BIOS, the greater the possibility that it will work.

Generally speaking, there are two ways of booting from a USB key. The first way, the computer treats it as if it were booting from a Zip drive [4]. This was the first way to go about it, and it requires special partitioning (so that your USB key's partition layout actually resembles that of a Zip drive). If your computer can only boot from a USB key using Zip drive emulation, then a saavy user's written a very good how-to [5] about how to use a script on the Knoppix CD to do the partitioning, and posted it to the Knoppix.net [6] wiki. My how-to owes him a debt, because I used some of his ideas.

The current way is to simply treat the USB key as if it were a hard drive. This is the method we'll use here, due to its simplicity.

Also, note that Damn Small Linux [7] (a tiny, 50 MB Knoppix-based distro) includes an easy-to-use script that will format and put DSL onto a USB key, using either Zip drive emulation or hard drive emulation. To avoid frustration, you might want to use Damn Small Linux to see if your computer actually will boot from a USB key as if it were a hard drive before performing all these steps!

To get started, boot from the Knoppix CD. When the (KDE) desktop is up and running, the first thing to do is to set a root password (by default, there is none) by clicking on the penguin icon next to the K menu and choosing "Set password for root" from the menu.

[8]

1. Creating a root password

 [9]
2. Creating a root password, continued

Next, insert your USB key. KDE will most likely pop up a window asking if you want to either "Open in a new window" (i.e. browse the files on it), or "Do nothing." Choose to do nothing (or click Cancel), because we don't want it mounted just yet. The key's icon should show up on the desktop, usually as sda1 or sdb1. Carefully make note of its name (in the form "sd*xy*") for the next step.

Go to the K Menu > System and choose GParted, a GUI-based partition editor, enter your root password when prompted, and choose your USB key from the drop-down menu to the right of the toolbar. Delete the partition on it (you **did** back up your data, didn't you?) and create two new partitions, both FAT16. Partition one should be 750 MB; the second should take up the remaining space. (Make 100% sure you're partitioning your USB key, **not your hard drive!**) When you're done, the results should look similar to this:

 [10]
3. Preparing for partitioning

When you're ready, click the Apply button.

Next, right-click on Partition #1 to bring up a context menu, and choose "manage flags." Set the flag on your new partition to "boot."

 [11]
4. Setting the boot flag

When you're all done, it should look about like this in GParted:
 [12]
5. Done partitioning

Again, at this point KDE may pop up two windows (for the two partitions you created) asking if you want to either see what's on your USB key or not. Tell it "no." Next, bring up a console window, type "su" to get root, and install syslinux [13] on the USB key, using the command

```
syslinux /dev/sda1
```

(substitute the real name of your USB key's first partition for "sda1" here, if it's not sda1).

 [14]
6. Installing syslinux

There are some files you'll now need to copy to your USB key's first partition, so go ahead and mount it and make it writeable. You do that by right-clicking on the key's desktop icon to bring up a context menu, and first select "mount" from the menu, and then "change read/write mode," pressing "Yes" when it asks for confirmation. At this point, there should be one file on your USB key's first partition, named "ldlinux.sys."

 [15]
7. Mount the USB key's first partition

 [16]
8. Make it writeable

Now we need to copy files off of the Knoppix CD onto the first partition of the USB key. Start up Konqueror as root by

choosing K Menu > System > More Applications > File Manager - Super User Mode. Give it your root password when asked.

[17]
9. Start Konqueror as root

Open the **/cdrom/boot/isolinux directory**, select all the files in it, and copy them to the root of your USB key.

[18]
10. Copying files - 1

Next, rename the "isolinux.cfg" file on the USB key to "syslinux.cfg" and delete the unneeded file, "isolinux.bin." Continuing on, copy the "KNOPPIX" directory and the files at the root of **/cdrom** to the USB key.

[19]
11. Copying files - 2

It'll ask you if you want to overwrite "cdrom.ico" and "index.html". Let it, by clicking "Overwrite All". This step will take a while, since you're copying a file that's almost 700 MB in size to your USB key.

[20]
12. Copying files - 3

When that's finally done, you can make some changes to "syslinux.cfg," which is (as you might guess) the configuration file for syslinux. Select it in Konqueror, which (unless you've changed your defaults) will bring up KWrite (a text editor). At the end of the second line, the one that begins with "APPEND," try adding "dma noeject noprompt home=/media/sda2/knoppix.img", which does the following:

- "dma" turns on dma settings for all hard drives and CD-ROM drives, which can speed things up
- "noeject" and "noprompt" makes it so that Knoppix won't try to eject the CD (since you're using a USB key) and won't prompt you to remove the CD before rebooting
- "/home=/media/sda2/knoppix.img" will load your soon-to-be-made persistent disk image

Those of you who've used Knoppix will recognize those as Knoppix "cheatcodes." Putting them here means you won't have to type them at the "boot:" prompt.

[21]
13. Modify syslinux.cfg

Almost done! Now to make the persistent disk image, which does more than just store your personal files from **/home/knoppix** -- it also saves changes you've made to configuration files, and even allows you to install programs, just as if you were running from a hard drive. (Granted, 200 MB isn't that much room.) To start, go to the Knoppix menu (the one with the penguin icon next to the K Menu) and select Configure > Create a persistent KNOPPIX disk image.

[22]
14. Create a persistent disk image - 1

When it asks you which partition to write it to, choose the second partition on your USB key. (I know the partitions are labelled "vfat" in the screenshot, but the partitions really are formatted as FAT16. Trust me.)

[23]
15. Create a persistent disk image - 2

It'll ask you to tell it how large to make the persistent disk image. Choose a number close to, but not completely filling, the partition's capacity. 200 MB should be good.

[24]
16. Create a persistent disk image - 3

Now you're (finally) done and ready to boot from the USB key. You will have to sort of babysit the boot process, because there's a dialog box that asks if you want to actually use your persistent home that comes up. (Then again, maybe you don't want to use it all the time, especially if you're using more than one computer.) You also have to explicitly give it permission to write to your persistent home. (Hint: Use the arrow keys to move; use the spacebar to select.)

About BIOS settings and booting from a USB key: On one test machine, which has a Phoenix AwardBIOS, I have to go into the CMOS setup utility, to Advanced BIOS Features, and to Hard Disk Boot Priority, then press "Page Up" until the "USB-HDD0" entry is at the top, and then save my settings and exit. After that, it'll boot from the USB key, if it finds one. (If not, it boots from the hard drive.)

On my other test machine, which has an AMI BIOS, all I have to do is press F11 to call up a menu asking which device I wish to boot from at boot time. Naturally, this is much more convenient.

That's all, folks! Have fun. (And those of you with huge 8 GB USB keys, consider installing the DVD version of Knoppix, which has the kernel headers included -- which you need in order to install such nifty things as proprietary video drivers.)

Howtos

Links:
[1] http://www.tuxmachines.org/taxonomy/term/58
[2] http://www.knoppix.com
[3] http://ftp.osuosl.org/pub/knoppix/
[4] http://en.wikipedia.org/wiki/Zip_drive
[5] http://www.knoppix.net/wiki/Bootable_USB_Key
[6] http://www.knoppix.net/
[7] http://www.damnsmalllinux.org/
[8] http://img72.imageshack.us/my.php?image=01setrootpwuc1.png
[9] http://img72.imageshack.us/my.php?image=02setrootpwjg8.png
[10] http://img72.imageshack.us/my.php?image=03partitionkeywf4.png
[11] http://img72.imageshack.us/my.php?image=04setbootflagdj5.png
[12] http://img72.imageshack.us/my.php?image=05donepartitioningjy8.png
[13] http://syslinux.zytor.com/faq.php
[14] http://img72.imageshack.us/my.php?image=06installsyslinuxky7.png
[15] http://img72.imageshack.us/my.php?image=07mountsda1xx3.png
[16] http://img72.imageshack.us/my.php?image=08makesda1writeablehl1.png
[17] http://img242.imageshack.us/my.php?image=09startkonqasrootmi7.png
[18] http://img242.imageshack.us/my.php?image=10copybootfilesfq8.png
[19] http://img242.imageshack.us/my.php?image=11copycdromfilesjz1.png
[20] http://img242.imageshack.us/my.php?image=12copycdromfiles2lh2.png
[21] http://img242.imageshack.us/my.php?image=13modifysyslinuxcfgfa2.png

[22] http://img242.imageshack.us/my.php?image=14createpersistentimageej1.png
[23] http://img242.imageshack.us/my.php?image=15createpersistentimagewv3.png
[24] http://img242.imageshack.us/my.php?image=16createpersistentimagexv4.png