

Re: Installing Fedora without a CDROM: my HOWTO

Source: <http://linux.derkeiler.com/Mailing-Lists/Fedora/2004-11/5786.html>

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Here is my HOWTO on installing Linux from a USB drive, ie without ISO CDROMS. It will work for your installation if you use a floppy boot disk or USB key rather than a CDROM boot disk.

Installing Linux from a USB drive.

Why:

- 1) It is much faster. A USB hard drive is very fast at transferring data compared to a CDROM or a network.
- 2) You can put a kickstart file on the hard drive and get all your machines the same, quickly.
- 3) CDROMs are inherently a little bit troublesome, ie one scratch can upset the whole install package. You never get a CDROM read error with a USB hard drive.
- 4) No network connection to mess with. (verus installing from a NFS or ftp server)
- 5) Put auxillary files (special drivers, post setup install config, etc.) on the USB drive.
- 6) You don't have to swap CDs ! This is especially nice when doing package add-remove after the install.
- 7) You can keep your install notes, etc. all organized on the usb drive. Everything you've ever needed to know about installs can be on your usb install drive.
- 8) You don't have to burn CDs. (Which will eventually end up in the landfill.)
- 9) It works with any PC with a USB port. (USB1 works too, just slower.)

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10) You don't have to have a cdrom on the target pc. A floppy will work with a floppy boot drive.

11) you don't have to test any CDROMS for media errors. This is hugely time consuming and should be done periodically on cds in heavy use/that have not been used in a while. All it takes is one scratch to wreck a Linux install.

For the record, I use a USB hard drive enclosure with a removable hard drive rack in it. This way I can mount any number of hard drives in the USB enclosure and access them from Linux. The Linux install drive is one of several drives I use in it. BTW: most USB-IDE enclosures will NOT allow a removable hard drive drawer to be installed. The space in them is not long enough as most ide hard drive drawers are longer than a standard IDE 5.25" device.

I have found one brand (Constar) that does, although it is a tight fit. The full name is Constar model ST2512 in B2, F and C variants. (USB, Firewire 400 and both, respectively.)

I've only done one install from a USB hard drive, but it is my favorite thus far and I've installed from ftp, nfs and cdrom.

How:

1) download and copy the isos to a directory on the usb hard drive. I think it can be any file system, ie FAT, FAT32, NTFS, etc, will work, but I have only tested with ext3. The isos need to be in a directory on the device, not on the root directory of the device. (This is due to a bug...) I put mine in /iso, but any location will do.

The easiest way for me to download the isos onto the install drive is to connect it to a machine connected to the internet and then ftp them directly onto the install drive. This way you don't have to have a spare 3 GB sitting on the download computer.

2) burn a boot disk for the install. Floppy or cdrom should work, I have only tested with the cdrom.

3) check the BIOS on the computer you are installing on. Some computers will allow booting from a USB storage device, in which case you could put the boot image right on the USB hard drive. I find that this is a finicky option with some BIOSes, so I disable it and chose to boot from the CDROM or floppy drive. If the BIOS reliably found and booted the USB device, it would be great as you wouldn't need a floppy or cdrom drive in the machine.

Some machines will hang on boot with a USB storage device connected and no valid IDE boot device. Don't ask me why ! The solution here is to boot without the USB storage device connected and then connect it later (below).

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3) boot the cdrom as you would for a normal install. I wouldn't bother with media checking as this cdrom is only going to be used to start the process.

4) At the boot command prompt, connect your USB hard drive and wait a few seconds for Linux to recognize the hot plug event and install the driver. After that, type "linux askmethod" at the prompt. At this point Linux will install a bunch of drivers. You should see a graphical "USB Storage Device" message appear briefly. BTW: I don't think USB hotplug was supported in pre 2.6 kernels.

5) A screen will appear asking which media you'd like to use to install. The options will be nfs, ftp, hard drive, local cdrom, etc. Your USB hard drive should be listed under the hard drives. Remember that if you installed the images onto an existing Linux drive, you probably put them on the / partition which is typically the 3rd partition on the device. Also remember that USB devices are typically scsi devices in Linux, thus your isos are probably on /dev/sda3...

Below that is a textbox requesting the directory with the isos. I was not able to leave this box blank or use / in it to represent the root directory. I had to put the isos in a directory and then put the directory in the box, thus I entered /iso. (My isos were thus in /dev/sda3/iso)

6) Proceed as per a "normal" installation.

Other notes:

a) Linux will recognize a USB keyboard and mouse during installation. Our servers are keyboardless. I plug a wireless USB keyboard/mouse combo into them when they need work. It saves having keyboards and mice cluttering the server area. (I do all normal administration via SSH.) I use a Logitech Duo wireless USB keyboard/mouse combo, but any should work nicely. BTW: be careful security wise with wireless USB keyboards. An "open" USB receiver (ie one without a keyboard) within range of a wireless keyboard may pick up the typing from the keyboard and use it on the computer if a session is open.

b) The "server" installation selection will NOT install X Windows. This means that no graphical configuration can be done on the machine. The "personal workstation" installation will NOT install any development tools meaning you can't build kernels or special packages. I install our servers with the base server package plus the development tools, X Windows and a bit of KDE. Why use graphical tools on a server ? Well, hard drive space is cheap compared to administration time and I find I am more productive with a few graphical tools around. If I am worried about system resources I boot with init 3 rather than init 5. `df -h` My typical server install in FC3 with X windows, Postgress, Apache and KDE, without spending any time being careful about what I install, is 2.2 GB.

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(No Evolution, no Open Office, but a browser. A lot of things are configurable with a browser these days and it is handy to have internet access when working on a problem.) You can set the default desktop manager in `/etc/sysconfig/desktop`. Change `DESKTOP="GNOME"` server to `DESKTOP="KDE"`.

d) nano makes a great comand line text editor for those of use that don't use emacs and vi enough to remember their commands.

e) If your computer hangs when booting with a USB device attached, try disabling "make USB available to DOS" in the BIOS. It worked on one of our machines.

f) My ideal computer cases have 2 USB ports on the front so that the mouse/keyboard and USB hard drive (for maintenance) have a place to plug in without going to the back of the machine or using a hub.

g) The next time you do an Add-Remove Applications (system-config-packages from the command line) it will prompt you for CDs even though you installed from a USB hard drive. To make changes using the USB hard drive instead of the CDs, start system-config-packages with `--- isodir=/path/to/your/isos`.

h) Speed with USB1 versus USB2 versus CDROM. With a USB1 connection (hardware limited, not by Linux !) I get a download speed of about 1 MB/sec. With a 16x CDROM drive, I get a download speed of about 1MB/sec. However the seeks, ie getting one file from here, another from there are much, much slower, thus the USB1 intstall is much faster than the CDROM. USB2 is much, much faster than either of these. The transfer speed will probably be limited by the speed of the hard drive, but I have seen USB2 read speeds up to 20MB/Sec.

i) The best way to download ISOs is to start the process before you go to bed at night. Now that you aren't using CDROMs, you can download the dvd image, which is just one file. Some mirrors won't let you have more than a certain number of processes open. Ie if you start 4 downloads, one for each iso, it might kill 2 of them.

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