

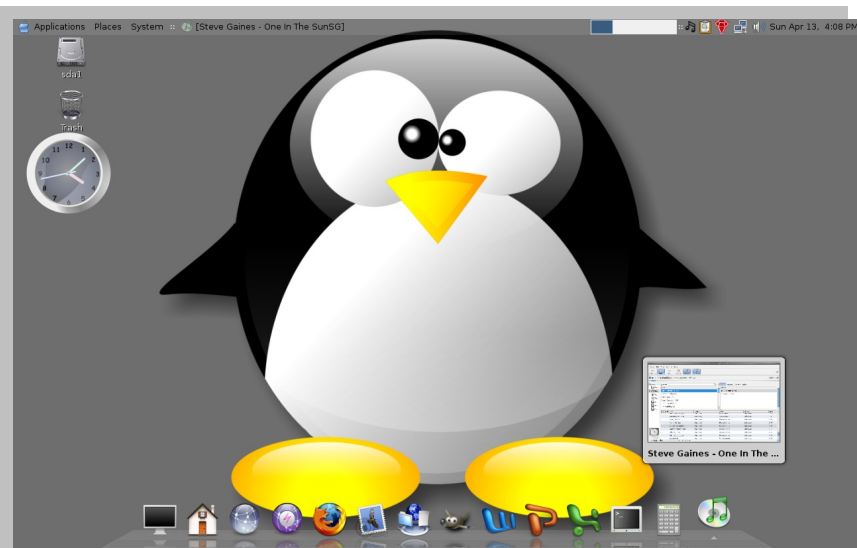
GNU/Linux, herein referred to simply as Linux, has become as user-friendly as *Microsoft Windows* or *Apple* operating systems. In this short article, we'll look at some of the differences and how to give Linux a try without changing your existing Windows setup.

Not only can Linux be easy to use, most often the operating system and associated software is free of charge. But just because Linux is free, don't think it must be lacking somehow. Linux is high tech and safe. It is unlikely you will need any antivirus software but if you want it, it is free.

Linux runs everything from my cell phone to my Sony TV. It runs everything from micro devices all the way up to Amazon.com. You can even try it out without ever installing it on your computer's hard drive. You can run the entire operating system and its applications directly from CD. Running an entire operating system is as easy as running any regular program from your computer's CD drive. The only thing stopping you from giving it a try is to find a copy, download it, burn the image to CD and [reset your computer's BIOS](#) settings so your computer will boot from your CD drive before it boots from your hard drive. More on this, and [how to get Linux](#) in a moment.

If your computer has [decent hardware](#), Linux can easily run 3D desktop effects, record DVD's, rip CD's, make movies and have you chatting and talking over the Internet with ease.

The two computers I talk most about here are two relatively inexpensive *Dell* computers; vintage 2005. One is a laptop with a 1.40 Ghz *Intel Celeron* processor and 512 MB RAM. The other computer is a desktop running a 2.53 Ghz Celeron, 512 MB RAM. Both run Windows XP as well as Linux. When starting these computers, I can choose either operating system with a click (this is referred to as dual booting). By the way, if you have an [older computer](#), there is a Linux for you too. I run *Puppy Linux* on an old Pentium 166.



Ubuntu Linux with an Apple Macintosh theme applied

Why move to Linux?

For me it was because Microsoft no longer supports any pre-XP Windows versions with any security or program updates. Without these updates, viruses and security are a concern. Another problem is that my "old" programs like *Microsoft Office 97* no longer run on XP. If history reveals anything, soon enough Microsoft will neither support XP nor the programs associated with that distribution. This gets expensive and can be oppressive. I decided it was time to accept the learning curve associated with a new operating system.

One great advantage of Linux is that most "distributions" (various flavors of the Linux operating system) are free. This makes Linux easier to try. Most programs that run on Linux are free too. And if you have some older Windows programs (pre XP) you'd like to use, there are even ways to run most of those older programs within Linux. But better than this, the free programs you can get for Linux are state of the art. *Open Office*, for example, is a full featured office suite that rivals Microsoft Office in many ways. You can open many MS Office documents in the Open Office counterparts or save Open Office documents in a format so others who use Microsoft Office can open your documents too.

What is Linux?

The Linux operating system can be compared to Apple or Microsoft Windows. The main difference is the philosophy that underlies its promotion. Since 1991, Linux has grown to what it is mostly through community efforts rather than being driven by capital markets. When you enter the world of Linux, for the most part you are entering a community of “open source” software. The software, whether it be the entire operating system or just the program you use to surf the Internet, is often free. You can even get the “source code” so you can (if you are so inclined) alter the program or operating system to suit your needs. Though Linux most distros and programs are covered by the GPL (General Public License), they are often free of common patents and other restrictions.

I've already mentioned “distributions” and “community” several times so let me explain these terms. There is no single company called Linux. The Linux distributions come from all around the world and in hundreds of flavors. These flavors are called distributions or “distros” for short. You could think of a distro as being like choosing between Windows 95, 98, ME, XP, Vista and so on. But whereas these Windows editions generally replace each other and become obsolete, you can find hundreds of up to date Linux versions. There are even specialty distros aimed at graphic artists, music aficionados or educators; with specialized programs preloaded for a particular area of interest.

There are many companies who produce versions of Linux. There are many individuals who make their own Linux distros too. All Linux distros benefit from community input into their development. You are free and encouraged to evaluate a test version of an upcoming distribution and help improve upon it with your feedback. Volunteer community involvement has been the driving force behind Linux from its inception.

Drawbacks

Particular drawbacks can be seen at a practical level. Many popular programs (and games) are made for Windows and/or Mac but not Linux because of the market size. For example, at the time of this writing (2008), Although *Adobe* offers a Linux version of their popular *Flash* program, they don't offer a Linux version of their *Shockwave* program. But probably the greatest practical single drawback that keeps Linux from becoming a more commonplace operating system is the work environment. Even though the Linux community and others offer many great accounting and image editing programs that may be compatible to some degree, offices that depend on programs like *Quickbooks* or *Adobe CS3* have no Linux versions available.

The Linux home user has life much easier. The main thing holding Linux back from popularity is the personal disadvantage of adapting to a new operating system despite the advantages.

Hardware

You would probably want to run a minimum of 256MB RAM on a Pentium II 500MHz processor or equivalent along with a 3 GB hard drive to run something like *Ubuntu* Linux. But you might be able to get away with as little as 32MB RAM and a 486 processor running at 100 MHz to run *Puppy* or *DSL Linux*.

Test Drive an operating system

As I mentioned, you can test drive Linux without installing it on your computer. In the Linux world there are distributions that will run “live” from CD. You can insert what's



Another theme

called a “live CD” into your ROM drive and run the entire operating system before installing it on your computer. (If you are working on a [very old machine that won't boot from CD](#), later I discuss how to run Linux on these machines.)

An easy way to find a live Linux CD is to [search](#) the Internet and then download it. I quickly found two Live CD's that worked well on both of my Dell computers: *Ubuntu* and *PCLinuxOS*. You simply burn the ISO image to CD and then test run the complete operating system from your CD drive. This is a great way to see what it looks like and test out its features and programs. The hardest part can be that there are hundreds of choices and terms you might not be familiar with. I'll talk about this a little and translate where necessary. Some of it I'll just brush over.

During your internet search, suffice it to say that you are looking for the current (sometimes called “stable”) version for the distro you want to download. (There are plenty of “test” versions out there that are for Linux testers and not for general public consumption but you probably want to try out a current, stable release.)

You will also need to be sure you download the version that will work with your computers' “architecture”. Sometimes the questions are put to you in fairly simple language (“download for an Intel PC?”) and sometimes the same question is not so obvious (download for x86 architecture?). The most popular download will be of the PC, x86 variety; these work with all 386,486, 586 etc... Intel processors. There are also download-able versions for Mac (Power PC architecture) and versions for non-Intel *AMD* 64 bit processors.

The download will take a while. Many operating system downloads will likely be about the size of a CD (700 MB). So we are talking hours. You can download from anywhere but normally you want to download from a site (often a mirror site) that is as close to you as possible. If the CD doesn't work, all you've lost is some time and a CD.

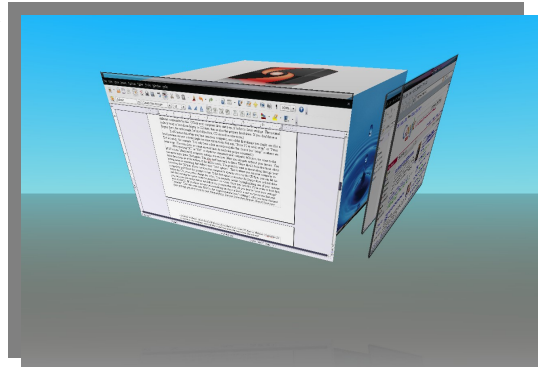
When your download is complete, you have to burn this disk image to CD (or DVD). The ISO you've downloaded is called a “disc image” so you have to burn it as a disc image and not as regular program files. Find out how to do this in your particular burning software or download something like *Infra Recorder*, a free Windows CD recorder.

Setting your BIOS

Once the image is burned you need to setup your computer's BIOS to “boot” first from your CD drive instead of booting first from your hard drive (as is the normal setting). Different computers have different commands for this. (What is happening here is that when your computer first starts-up it looks to these settings. Many older computers used to try booting from the floppy drive first and try the primary hard drive next. Newer computers try the CD or primary harddrive first.)

OK, so when you first start your computer, one of the first things that flashes across your screen is a brief instruction that says something like, “Press F2 to enter setup” or “Press Del for setup”. You only have a few seconds to make this choice but “setup” is where we want to be. You may have to restart several times to catch the proper command. (Note: On some computers, if you simply hold down the “Delete” key while booting, your computer will boot from an alternate drive without resetting the BIOS.)

After pressing “F2” or “Del” or whatever command your computer tells you, we come to the BIOS screen. Many initial computer settings are set here. Here you navigate without your mouse. You use arrow keys, Enter, Backspace, Tab, Esc and keys such as these. There should be instructions about what these keys do at the bottom of the BIOS screen. You probably want to arrow along through your setting menu to something that defines your “boot options”. This is where you set your computer to boot from the CD first. If you see that your computer is already set to try the CD first, you can hit the escape key and follow the



Rotate and view 4 virtual desktops

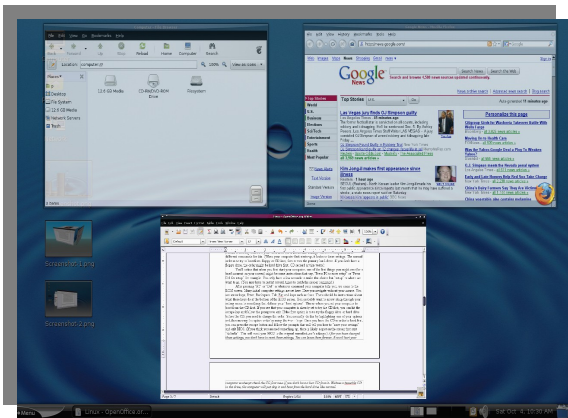
prompts to exit. If the first option is to try the floppy drive or hard drive before the CD, you need to change the order. You normally do this by highlighting one of your options and then moving the option order by using the + or – keys. Once you have the CD in order to boot first, you can press the escape button and follow the prompts that will tell you how to “save your settings” and exit BIOS. (If you think you messed something up, there is likely a spot on the screen that says “defaults”. This will reset your BIOS to the original manufacturer's settings.) *After you have changed these settings, you don't have to reset these settings. You can leave them forever. It won't hurt your computer to always check the CD first even if you don't boot a live CD from it. Without a bootable CD in the drive, the computer will just skip it and boot from the hard drive like normal.*

Once you have exited the BIOS screen, insert the CD into the drive and restart the computer. It will read your CD first and boot your live Linux CD from there. If this version of Linux will work properly on your computer, it will boot up, look good and you can play with it. Remember, you are running it from the CD so the commands will take a little more time to complete than it would if the operating system were actually installed on your hard drive.

Running Linux

If your computer is physically wired-up to a home network for Internet, you should be able to access the Internet. Once in a while you'll have to put in a couple settings that correspond with your router settings. If you use wireless networking, this might get complicated (just like it can be within Windows). With Ubuntu and PCLinuxOS on my desktop machine, my wireless (USB) connected automatically once I put in my settings for my wireless security. The procedure was a bit more complicated for my wireless laptop. I had to download a program that made my wireless modem work.

Regardless of what system you use, there will be a learning curve. Some Linux distributions are more newbie friendly than others. Some distros should but simply won't work with some hardware combos. Luckily, however, you can try as many distros as you can find a live CD for. You will have to learn new programs but many will be quite similar to what you have used before. It took me some time to learn Windows 95 and a little time again to learn to use Windows XP. This is to be expected with Linux too. If you have an issue with wireless networking, for example, you will likely learn new things and you may have to dedicate yourself to learning more than you had anticipated. You might find that certain cameras, scanners or wireless cards will simply not work for you or your version or any version of Linux. Telephone modems are the same. Many modems are *Winmodems* and may not work with most Linux distros. My printers and scanner works fine but my newer camera wouldn't work. (My guess is that in a few months there will be updates that will make it work ... this is not at all uncommon.) My MP3 player worked fine. So, if you are in the market for new devices, keep compatibility in mind when you shop.



With a mouse movement, view open application thumbnails on every desktop

Linux program management

Installing programs is different with Linux.

Under Windows, you normally install programs by double-clicking on an executable file (on a CD or downloaded from the Internet) and it installs itself. You often uninstall a program through the uninstall program interface. Many Linux package management systems install **and** uninstall programs. If you don't find the program you're looking for when you click on your *Synaptic* package management icon, a search of the Internet might reveal a program you can download and install. Once again, most programs are free of charge.

When you download a program from the Internet, you can often choose different types to

install. Ubuntu utilizes Debian packages (.deb). PCLinuxOS utilizes Red Hat package management (.rpm). These packages self-install when you double-click on them much like a Windows programs do. But sometimes your options might be limited to downloading a “Tarball” that is a zipped (compressed) “GZIP” file similar to a Windows “Zip” file. These tarballs might require more steps to install them. More on Tarball installations later. (By the way, although Ubuntu utilizes .deb packages and PCLinuxOS utilizes .rpm packages, *Synaptic* chooses the proper package for you from the proper repository.

Which distribution to choose

Many people have personal opinions for why they prefer their particular Linux distribution. Though there may be prejudices or arguments about relative merits of one distro over another, for me it is much like choosing a Ford or a Chevy; one isn't right or wrong. The reason I chose Ubuntu was quite practical. I wanted one that was newbie friendly that I could find plenty of online info about. Other than this, a couple distros I chose wouldn't boot correctly with my hardware. Both Ubuntu and PCLinuxOS worked just fine. Over the long run, Ubuntu has been more satisfactory for my taste.

I have to say, I was not thrilled at all with the default look and feel of Ubuntu as compared to PCLinuxOS. Part of this is because Ubuntu uses a *Gnome* desktop environment whereas PCLinuxOS uses the *KDE* desktop environment. (Windows users don't have a choice with desktop environments and so might be surprised to know there are choices under Linux but there are a number of desktop environments available for Linux users.) But after some tinkering, I setup Gnome to suit my tastes.

I'll note here that some Linux programs will only function correctly under one or another desktop environment. For this reason, using the package management system (*Synaptic*), I add KDE to Ubuntu so I can use a wider range of programs.

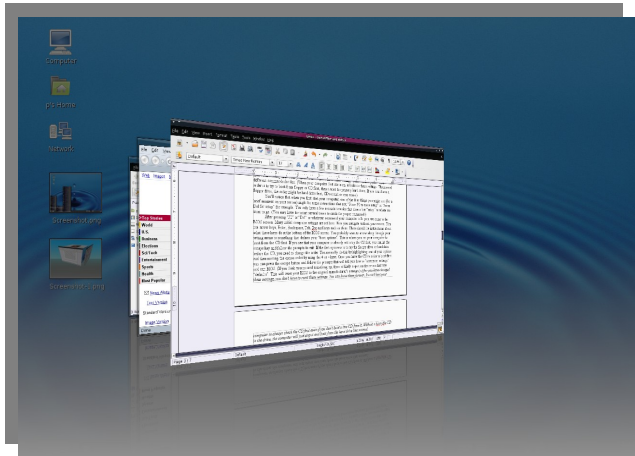
On to the install

If you like Linux you might want to install it on your hard drive. You have to find a few things out and have some decisions to make. On my desktop, my hard drive was already partitioned in half. Windows was on my C drive and my D drive was blank. My CD-RW/DVD ROM was my E drive. I decided to use my D drive for my Linux installation. I won't describe this because it will essentially be covered as a part of my laptop install process.

My laptop had one partition on the hard drive. It had Windows on it. Now, I could have run the Windows defragment utility and then resized the partition during the install but I didn't really understand the process so I decided on “plan B”. I decided to just backup all the stuff I wanted to keep and repartition the hard drive and then reinstall Windows on one partition and then install Linux on another.

If you are planning to run Windows as well as Linux on separate partitions, you should always install Windows first ... then install Linux. Using two operating systems on different partitions is called “dual booting”.

First I reinstalled Windows. I made two partitions when I did the install. I already knew how to do this and won't explain it here. Then I was ready for Linux and I'll walk you through the Ubuntu install. Other Linux installations are similar. On a side note: It took me one and a half hours to get Windows and drivers installed to be usable. To get to the same point in Linux took a half and hour.



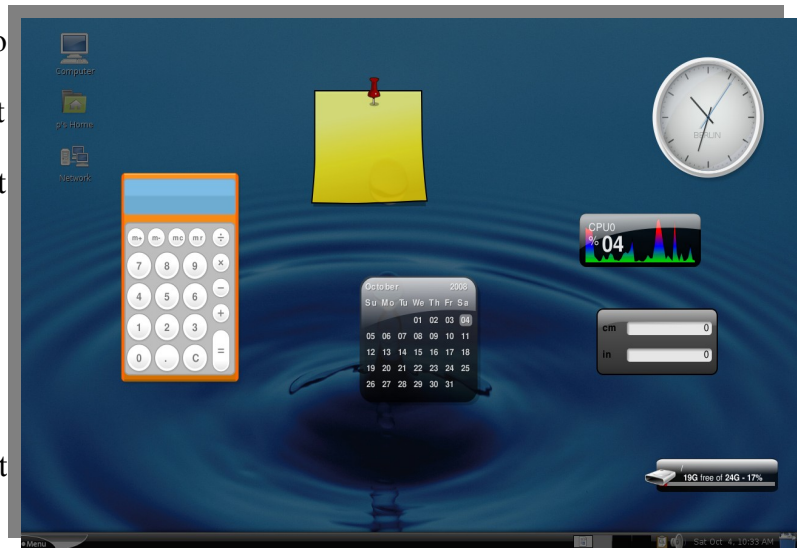
Another mouse move displays slides of open applications

I booted up Ubuntu from the live CD and then ran “install” from the desktop icon. The partitioning program that comes as part of the Ubuntu install process makes it easy to just wipe away the entire hard drive and use the whole thing for Linux. But there are also options to select, make and resize partitions. I selected to manually edit the partition table. The first thing I learned is that Linux doesn't call drive divisions; “a, b, c, d, e”, etc... Linux calls them hda1, hda2 etc.

I saw my partially used Windows partition along with an info box that was bordered with a color. Below that same color key told me that it was my NTFS file system (Windows). There was another partition that was unused so I had to create a usable partition for Linux. The bottom of the page advised me to also leave at least 256 MB free for a swap partition. I highlighted the unused portion and went up and clicked new. I was asked to tell it what I wanted the new size to be in MB's. I made this partition 300 MB smaller than the total size available to me. I called it a “primary partition” and left the default file type as “ext3”. Then I made another partition in order to use the rest of the space for the swap partition. I set it as a primary partition also and chose Linux Swap to be the file type. (I left the “/dev/hda1, NTFS” partition alone and left it with the existing note next to it that called it “boot”.) By the way, a “swap” partition is used like additional random access memory in case it's needed.

I hit the “forward” button. A screen verified that I wanted to leave my root “/” and swap “swap” as I had configured them and committed myself to the partitions and to begin the install. It gave me one more warning/confirmation page. I reviewed it carefully. It said that GRUB would be installed on hd0. (I didn't know what that meant so I let it go). I clicked “Install” and 15 minutes later it was done. I removed my CD; hit “enter”, the computer restarted.

As the computer began to boot up, I was offered the choice to select “Windows XP” or if I did nothing, the computer would boot into Ubuntu. I let it boot to Ubuntu. As I said before, the default Ubuntu desktop looked fairly bland and brown but it was also pretty



Layer your desktop - A keystroke reveals useful "widgets"

much a blank tablet for me to do with as I pleased. After a theme change and with a nice photo from the Internet as my background, I felt more at home. I also removed the top “taskbar” and put everything down on the bottom as I had become accustomed to while using Windows. All of these were simple enough changes. If you figured it out in Windows, you can figure it out under Linux.

Older computer installs

If you are trying to install something like *Puppy Linux* or *DSL* (Damn Small Linux) on an old machine like my old Pentium 166, you may need to boot from Floppy because the BIOS may be too old to boot directly from CD (even if you set the BIOS to search for the CD to boot from). This is where things get more complicated.

To do this, on your Windows machine, you may want to download a program called, *Smart Boot Manager*. (Do an Internet search; you'll find it.) SBM consists of two small programs to put on a floppy disk. They are, “sbminst.exe” and “cwsdpmi.exe”. Download these and then put the .exe files on a floppy disk.

Now you need to make sure your BIOS is set to try the floppy “a” drive first and the CD drive second and your “c” drive third.

Boot into DOS so you can get to the floppy “a” prompt. You can use a Microsoft Boot Floppy or often hitting F8 key at the initial startup menu gets you to a place to choose “command prompt

only”. This should get you to `c:\>` Then type `a:\` and press enter and you should be at the `a:\` prompt to use your floppy.

Once you have gotten to this prompt, type these DOS commands (pay close attention to spaces and case sensitivity):

```
sbminst -t us -d 0
```

(That “0” is a zero.) This remakes the disk (that has so far been unreadable by Linux) into a standalone boot manager for Linux. You can now restart the computer with the floppy disk inserted and find your CD drive. Put your bootable CD image in and then install from CD as described earlier.

By the way, You can make your own boot floppy from MS DOS this way:

Get to the DOS prompt. (Once again, often by hitting F8 key at the startup menu ... and choose “command prompt only”.) At the C prompt (`c:\>`) type the following:

```
format a:
```

(this formats the floppy disk) It looks like this:

```
c:\> format a:
```

Then type

```
c:\>
```

to get back to the “c prompt” and type

```
sys c: a:
```

(this copies system files to your floppy and makes your disk useful to get to the command prompts for installing Windows or whatever disk you have).

More program installation details

When you download a Linux program from the Internet, it is often in a `.tar.gz` (or `.tgz`) file, which is a Tarball archive that has been compressed. Before anything else, you must uncompress these archives just like you need to uncompress a “*zip*” in Windows before you can use the files inside.

Generally you can open a GZIP file by just double-clicking on it. Sometimes you can install the uncompressed program by simply double-clicking on the “install” or “install.sh” file. Sometimes you need to right-click on the file, go to properties, then permissions and click the check box that says “allow executing program as a file”. Sometimes you can double-click on the `.bin` file and choose, “run in terminal”.

One of these methods or a combination of them (read the “readme” file) will install the program. If this doesn't work in your case, you'll have to investigate further on the Internet or skip this particular program.

These are the basics of Linux. Perhaps more will follow.