THE LINUX FILESYSTEM LAYOUT - GENERAL EXPLANATION

Many newcomers to linux have looked at the way it is laid out and cringed. "It looks so different to windows" is a common complaint. This is true, but thats almost the reason we want to move to linux is it not, it is not windows, linux does in fact owe a lot to it's unix heritage. But ranting aside, lets take a look at the filesystem layout in general terms, and see if we cannot demystify it a bit.

- */*
  This is the *root* of the linux filesystem, it contains all the other directories. This is also the first mounted directory, so if it cannot be found, the the boot process will stall.

- */bin*
  As you may have guesses *bin* is short for *binaries*, and it is in this folder that all the binaries/programs required for booting and using the system. There should be no subdirectories in this directory.

- */boot*
  This is where everything is that happens before the kernel launches any type of user mode programs. There is the kernel image, the kernel configuration file, grub has it's config file here, etc. Changing things here unless you know what you're doing is bad, thus this directory should only be owned by root. A general security recommendation is that this directory should be on it's own little partition.

- */dev*
  Here *dev* is short for *devices*, it is here where all the different devices used by your linux system reside as well as many more. There are literally hundreds of files here which correspond to your hardware. Like */dev/hda* is the device file for your first ide device. The devices in this directory can mostly be put into two type of devices, the first are block devices which are used to store data, these include hard drives, cdrom's, etc. The second broad type of devices are character devices which are used to transfer data, these include serial ports, usb, firewaire, etc.

- */etc*
  A very important directory this one, and one to definetly back up. This is where all the system-realted configuration files are stored. This includes those for the base system such as */etc/passwd* or */etc/resolv.conf* as well as for any packages which may be installed, such as */etc/samba/smb.conf* or */etc/ssh/sshd_config*. Be very careful of playing with the files here.

- */home*
  Pretty self-explanatory this one, this is the where all the users have their home directories and where all of their files are saved by default. Generally most systems are setup in such a way that each user's directory is only usable by that user. It can also be very helpful to have this directory on its own partition. Not only does this make upgrading easier, but it also stops any user from using up all the space on your system disk with their files.

- */lib*
  Here *lib* is short for *libraries*, and it here that linux stores it's shared libraries, which can be seen with the *.so* extension. These files are needed by the system and many of the tools used on the system. Certain folders hold the modules used by the kernel itself. Fiddle here only if you know what you're really sure you know what you are doing.

- */mnt*
  The mount directory, which is shortened to *mnt*. It is here where devices are generally mounted. Now *mounting* is something which a lot of people new to linux struggle with. When you mount a device you make it accessible to the system. Using *mount /dev/hda1 /mnt/data* will *mount* the first partition of your

first ide device */dev/hda1* to the directory */mnt/data*, so that anyone on your linux box wishing to access the data on this partition would look in */mnt/data*. You remove this *mount* by using *umount /mnt/dev/hda1*. If you want these *mounts* to occur at startup add the information to */etc/fstab*. A lot of modern distributions will also do automounting, automatically detecting any new devices and automatically mounting and unmounting them. But I believe that it is always a good idea to know what to do just in case.

- */opt*
  Optional software -not part of the standard install- generally goes here. Each piece of software will have it's own directory. This is also where software which has been installed system-wide goes.

- */proc*
  This directory allows you a real-time access window into the workings of the kernel. The files are generally all 0 bytes in size, but do have data contained within them. The directory is therefore referred to as a *Virtual File System*, as the files are representations of different kernel configurations. You can view view some, to see exactly what is happening on your server.

- */sbin*
  In *sbin* are the binaries generally used by the systems administrator to carry out their duties. The binaries here would be for things like creating partiotions, or filesystems, etc. This could also be where certain network daemons are installed to.

- */tmp*
  Also pretty self-explanatory this one, */tmp* is where any temporary files go. This directory is specifically setup so that anyone can write to it, but only the owners of the files in it can actually use them. Also, this directory is generally cleaned up -everything deleted- with each reboot.

- */usr*
  This is the home to all the user space binaries and the libraries, documentation, etc that go with them. For this reason */usr* occupies quite a bit of disk space. You will also see that it has many subdirectories which are found off of the / directory. All of these contain user space application information.

- */var*
  In */var*, short for variables, is all non-static data. This includes log files, mail files, spool files, etc. The files in this directory are expected to be constantly changing.

Well, thats it. Please be aware that this is nothing but an overview. Things can and do change from distribution to distribution. Also each of these directories could have heaps more detailed information written about them. But the above descriptions are a broad map, which should help you better find your way around, and help you understand, your linux box.