Physics 410: Physics and Astronomy Computer Lab PC/Linux Machines

The Physics and Astronomy Department currently has three PC workstations running Linux (Mandrake 9.2), that you will be able to use during this course. They are located in Hennings 205, at the end of the room closest to the door, towards the exterior wall. These machines have dual reasonably fast processors and good graphics cards, so are suitable platforms for developing and running computational- and graphics-intensive applications. Let me know *immediately* if you have any problems using them.

Machine	Processor	Memory	Disk	Graphics
lnx1.physics.ubc.ca	2 x 700 Mhz PIII	512 Mb	20 Gb	nVidia GEForce 2 MX (32Mb)
lnx2.physics.ubc.ca	2 x 700 Mhz PIII	512 Mb	20 Gb	nVidia GEForce 2 MX (32Mb)
lnx3.physics.ubc.ca	2 x 800 Mhz PIII	512 Mb	20 Gb	nVidia GEForce 2 MX (32Mb)

In addition, there are nine older, and significantly less powerful PCs located on the same side of the lab, which are currently configured as "X-terminals", and which are served by the machine **lts1.physics.ubc.ca**. You can login to **lts1** from any of these machines, and from there you can open one or more terminal applications and, from those, **ssh** to any of the **lnx** boxes. This configuration of the older PCs as X-terminals is new, so there may still be some glitches that need to be worked out. Again, contact me *immediately* should you encounter problems.

NOTE: During the term, Physics 410 students have priority use of the **lnx** consoles. However, the other PCs in the room may be reserved from time to time for use in other courses. Please refer to the Lab Schedule for times when the lab is booked for such purposes.

Please make careful note of the following:

1. You *must* get an account on the Physics & Astronomy server, **physics.ubc.ca** before you can get an account on the **lnx** machines. Undergraduates can get an account on **physics** by "self-registering" in the Computer Lab. *Graduate students, and graduate students ONLY can see Mary Ann Potts, for an account.* This account will also provide you with access to **lts1** via the X-terminal PCs.

2. Your password on the **lnx** machines will be the same as your password on **physics.ubc.ca**.

3. Please do *NOT* change your password on the **lnx** machines, unless you think it absolutely essential. If you *do* change it, it will have to be changed on each of **lnx1**, **lnx2** and **lnx3** separately.

Note that your home directory on these machines ("the **lnx** machines") will be distinct from your home directory on **physics.ubc.ca**, but that you will have a *common* home directory on **physics.ubc.ca** and **lts1.physics.ubc.ca**. Those of you who had **physics** accounts prior to approximately August 2003 may find that adjustments need to be made to your shell-start up files to take into account this commonality. Again, contact me if you have any questions in this regard.

At the current time, it is *not* possible to access your **lnx** files directly from **physics** (**lts1**) or vice versa.

Notes on Linux Desktop Environments: Over the past few years, great progress has been made in equipping Linux with powerful graphical user interfaces (GUIs, window managers) to the core operating system and major applications. When you login to the console of one of the **lnx** machines, you can select from five such interfaces. I recommend that you use one of the following window managers

- **KDE**
- **Gnome**

Windows afficionados should feel especially comfortable with KDE. Both interfaces have extensive on-line help facilites.

Initial login procedure: When first logging-in at a console of one of the **lnx** machines, do the following:

1. Type your username in the login-prompt type-in.
2. Click on the **Session** icon on the lower task bar, and select either **KDE** or **GNOME**.
3. Return the mouse to the login-prompt type-in area, hit **Enter**, type your password at the prompt, then hit **Enter** again.

IMPORTANT!!: **Note on X-terminal Desktop Environments:** At the current time you can only use **Gnome**, NOT **KDE**, on the X-terminal PCs. In an ideal world, this would get fixed shortly, but unfortunately the problem has persisted for over a year. (If you *do* choose KDE from the login window on one of the X-terms, the system will (probably) initiate your login, present you with a KDE start-up wizard, etc., but you will also encounter error-message pop-ups, and eventually will be returned to the login screen.)

Note on lnx home directories: The **lnx** machines have access to each others' disks via **NFS** (Network File System). The process of attaching a remote file system to a directory name within the local Unix system (i.e. to a directory name somewhere within the file hierarchy rooted in /) is known as *mounting* the file system. In a shell, you can generate a listing of all of the file systems currently mounted with the Unix **df** command. For example, you can see the output of **df** as executed on **lnx1** **HERE**.

Again, each of you has a *single* home directory on the **lnx** machines, and that directory is physically located on *one* of the machines **lnx1**, **lnx2** or **lnx3**. (I leave it as an exercise for you to determine on which specific machine yours is located.) Let's consider the case of the ''test'' user **jdoe**, whose home directory is physically located on **lnx1**, within the file system **/home**:

```
[jdoe@lnx1 ~]$ cd
```

```
[jdoe@lnx1 ~]$ pwd
/home/jdoe
```

jdoe now logs into **lnx2** and executes the same command sequence:

```
[jdoe@lnx1 ~]$ ssh lnx2
Warning: Permanently added 'lnx2,142.103.238.212' (RSA) to the list of known hosts.
jdoe@lnx2's password:
No mail.
[jdoe@lnx2 ~]$ cd
[jdoe@lnx2 ~]$ pwd
/d/lnx1/home/jdoe
```

This behaviour can be understood by looking at the specific part of the output from **df** which tells us about the file systems from **lnx1** which have been mounted on **lnx2**:

```
[jdoe@lnx2 ~]$ df | grep lnx1
lnx1:/home            19449328   7048332  11413004  38% /d/lnx1/home
```

Since the remote, physical file system **lnx1:/home** has been mounted on the local file system /**d**/**lnx1**/**home**, when logged into **lnx2**, **jdoe**'s working directory is indeed /**d**/**lnx1**/**home**/**jdoe**.

Moreover, things have been set up so that you can use the "long" form of your home directory on **all** of the machines, so that, for example, **jdoe** can execute the following:

```
[jdoe@lnx1 ~]$ cd /d/lnx1/home/jdoe
[jdoe@lnx1 ~]$ pwd
/home/jdoe
```

Note that the specific name of the local mount point, e.g. /**d**/**lnx1**/**home**, is a matter of convention ('d' for disk, then the hostname, then the remote file system name); other system administrators will use different conventions for NFS mounts.

Finally, as mentioned above, you can access your **lnx** home directories directly from **physics** since the /**home** filesystems on the **lnx** machines are NFS-mounted on **physics** as

```
/d/lnx1/home
/d/lnx2/home
/d/lnx3/home
```

Thus, for example, on **physics**, any of

```
physics% cd /d/lnx1/home/userid
physics% cd /d/lnx2/home/userid
physics% cd /d/lnx3/home/userid
```

should take you to your **lnx** home directory.

As always, contact me immediately if you have any questions, or encounter any problems, regarding this issue.