Installing Linux on JMU Computer-Science Department Removable Hard Drives for CS-450 and CS-550

(1) Be advised that the complete installation of ***Linux*** takes at least slightly in excess of one hour, so don't start unless you have enough time available to carry through to completion. You will need the three Red Hat installation CDs, and also a blank diskette which you will use to make a boot diskette.

(2) Insert your removable hard drive into the matching computer slot, insert the key and turn it ¼-turn counterclockwise to lock the hard drive into place.

(3) You will do a **custom installation** of ***Linux,*** with the following partitions:

(a) a 100-MB **/boot** partition;
(b) a swap partition of size 512-MB (because all of the lab machines are equipped with 256-MB of Main Memory); and
(c) a root partition (**/**) of slightly more than 2GB in size

(4) Make sure the floppy disk drive is empty, and insert "Red-Hat ***Linux*** Disk 1" into the CD drive.

(5) Initiate a hard boot by pressing either once or twice the top button on the System Unit (turns the electrical power on or off).

(6) During the Power-On Self-Test (POST), you will see the blue DELL logo displayed on a black screen, with a little while bar graph below it. After a few seconds of this display, the words "F2 = Setup" appear in the upper right hand corner of the screen. During this phase of the boot process, press the <F2> function key. The display in the upper right-hand corner should change

immediately to the words "Entering Setup", but the Setup screen does not usually appear until after several seconds have passed.

(7) Confirm the amount of memory installed in the system at 256 MB.

(8) Scroll down to "Boot Sequence" and press <ENTER>. Use the space bar and the '+' and '–' keys to set the boot sequence to:

1. IDE CD-ROM Device
2. Diskette Drive
3. Hard-Disk Drive C:

(9) Press <ENTER> to continue, and then <ESCAPE> to exit. If you made any changes to the existing boot sequence, you will be given three choices. Select "Save Changes and Exit", and press <ENTER>. When you exit from Setup, the boot sequence continues.

(10) In response to the first "Red Hat" screen, type nothing and just press <ENTER> to continue with the installation in graphical mode. If you do nothing instead of pressing <ENTER>, you will also proceed in graphical mode, but only after a perceptible delay.

(11) You will be given the option of performing a media test of the Compact Disk. This takes about four minutes per disk. Take your choice of either performing the test or skipping it.

(12) Following the media test, beneath the graphics display there will appear a black text area on which it will say, "Running anaconda, the Red Hat Linux system installer - please wait…." Observe the sequence of messages that will subsequently be displayed at the bottom of the screen.

(13) At the "Welcome" screen, read the entire "Online Help" frame, and then click on "Next". Note that most of the subsequent screens will also have "Online Help" frames. These contain very useful information, so it is a good idea to read them all as you go through the installation process.

(14) For each of the following labeled screens, make the indicated choice:

(a) Language Selection:	English (English)
(b) Keyboard Selection:	US English
(c) Mouse Configuration:	Wheel Mouse (PS/2), **<u>and also</u>** check the "Emulate 3 buttons" box.
(d) Upgrade Examine:	Perform a new Red Hat Linux installation
(e) Installation Type:	Custom
(f) Disk Partitioning Setup:	Automatically partition; you will have the option of reviewing and modifying the automatically-generated partition sizes

(g) Automatic Partitioning: Whichever choice is appropriate:
Remove all Linux Partitions (pick this if there are no pre-existing partitions)
or
Remove all partitions on this system (if your hard disk had another operating system installed previously)

And also, click on "Review (and modify if needed) the partitions created"

(h) Partitioning: Edit the entry for each partition, as follows:
(i) Do NOT force any of the partitions to be a primary partition.
(ii) DO request "Check for bad blocks" for each and every partition. The check should take about 4-1/2 minutes total for all three partitions, but will not take place until installation begins, which occurs after all choices have been specified several screens down the road.

(15) The entry for the boot partition (Mount Point: **/boot**) should specify type "ext3" and a fixed size of approximately 100 MB. Remember to check for bad blocks.

(16) There should be an entry for a swap partition (entry for Mount Point left blank) with a size of 512 MB (twice the size of Main Memory). Remember to check for bad blocks.

(17) Edit the entry for root partition (Mount Point: **/**) by selecting type "ext3" and "Fixed Size", and adjust the size of this partition to about 2500 MB, **if** you have enough space on the disk. However, after setting up the other partitions, check and be sure to leave at least 50 MB of free space on the hard disk for possible use later. If necessary, make the root partition a bit smaller than 2500 MB in order to do this. Remember to check for bad blocks.

(18) Other choices for variously labeled screens:
(i) Boot Loader Configuration: Install GRUB **without** a boot loader password, and check the box to "Configure advanced boot loader options"
(j) Advanced Boot Loader Configuration: Put the Boot Loader record on the Master Boot Record (MBR), and under "General kernel parameters" fill in:
text,mini_watchdog=1
(k) Network Configuration: Leave as is
(l) Firewall Configuration: No Firewall
(m) Additional Language Support: Whatever languages anyone in the group understands
(n) Time Zone: America/New York Eastern Time

(o) Set Root Password: "**5440orFight**" (no spaces, and watch the capitalization)

(p) Authentication Configuration: Enable MD5 passwords **and also** Enable shadow passwords[1]; skip all 4 tabs (NIS, LDAP, Kerberos, SMB)

(19) Package Group Selection.

(a) You MUST include (check the box for the entire package, and take the default members that come with each package, **except** as noted below under "Administrative Tools"):

Editors
Development Tools
Kernel Development
Administrative Tools: Cclick on "Details", and accept ONLY:
authconfig.gth
redhat-config-packages
redhat-config-proc
redhat-config-users
redhat-logviewer
System Tools

(b) If space allows, also include:

X Window System
GNOME Desktop Environment

(c) If there is sufficient additional space, then also include:

Office/Productivity
Authoring and Publishing
Games and Entertainment

Before clicking on "Next", note the "Total install size" shown at the bottom of the screen. The amount of space shown is only an estimate; for all of the packages under items (a), (b), and (c) above, the estimate comes to just a little under 2,100 MB. The actual amount of space taken up by the selected packages may well exceed the estimated amount, so it is best to allow for 200 MB or more over the indicated space required. If you attempt to install onto a disk partition exactly equal to or only slightly larger than the estimated installation size, then the installation might fail after proceeding for over thirty minutes, at the point just before it is nearly complete. This can be very costly to you. Therefore, it is better to install fewer items, and to add to the installation later by means of an installation update, rather than risk having the installation abort after it is nearly complete.

[1] These two options are absolutely useless in a machine that is not connected to a network, but I would like they constitute basic security procedure for a networked machine, and therefore I would like you to get at least a little bit of experience working with them.

(20) Click twice on "Next" to begin the installation. Note as the installation proceeds that the time estimates shown on the screen are also inaccurate. The packages shown above take between 30 minutes to an hour to install from this point to the end. You will be prompted eventually to replace the CD with Red Hat installation Disk 2 and Disk 3.

(21) The final step in installation is the generation of a boot diskette. Do this so that in the event of problems that might arise later, you will be able to boot up your system,

(22) On the various post-installation configuration screens, choose the default values, and proceed to the end.

Further instructions to follow. This should get you through the installation process, however.