The following contains a few common issues with fixes. Please read the entire document and keep a copy with you while in lab.

1. **All Linux machines (virtual machines as well as the host operating system) must be powered off properly.** DO NOT close VMWare while a virtual machine is running as this can cause files in the virtual machine to get corrupted. To shutdown Linux in the "proper" manner, open up a terminal window and type:
   
   ```
   shutdown -h now
   ```

   **DO NOT SUSPEND A VIRTUAL MACHINE WHILE IT IS RUNNING.** It is OK to have three virtual machines running at the same time; you do NOT have to turn one machine off in order to power another one on.

2. **Students have seen the following issues while booting a machine on VMWare.**
   
   **a. A virtual machine is unable to boot because of a WRITELOCK error.**
   To fix this, open a terminal window and browse to the vmware directory and then to the virtual machine in question’s directory. Type the following to delete all files with a WRITELOCK extension:
   
   ```
   rm *.WRITELOCK
   ```

   **b. A virtual machine is unable to boot because of a missing vmmon module.**
   To fix this error, open up a new terminal window and type the following:
   
   ```
   service vmware start
   ```

   Then go back and try booting the virtual machine again.

3. **If for some reason your virtual machines or your host machine refuses to ping, check the machine's IP address.** If the machines are shutdown improperly, it may cause them to lose their IP addresses. Type:
   
   ```
   ifconfig
   ```

   to see if the correct IP address shows up. If incorrect, or if no IP address, type:
   
   ```
   ifconfig eth0 a.b.c.d netmask 255.255.255.0 <where a.b.c.d is the machine's correct IP address>
   ```

   If you do see an IP address but the mask is incorrect (i.e. NOT 255.255.255.0), then you must type the above line again to correct the mask.

4. **If you CAN ping all three machines, but you are unable to connect to the NAS or to any other machine outside your network, then check to see if the default gateway is present in the routing table.** To do this, type
   
   ```
   route
   ```

   to see the routing table. Usually, the third entry should show the default gateway as 57.35.6.1. If this entry is missing, type:
   
   ```
   route add default gw 57.35.6.1
   ```

   AND THEN MAKE SURE THIS SHOWS UP IN THE ROUTING TABLE.

5. **The nas folders MUST be mounted EVERY time you reboot your machine (host and virtual machines).** This is done by typing
   
   ```
   mount /mnt/nas <for ECE 4110>
   mount /mnt/nas4112 <for ECE 4112>
   ```
and entering the respective passwords. If you see the connection failing, then check the error message. If your machine is trying to connect to 57.35.10.10, then this is a mistake in the /etc/hosts file. Type
```bash
gedit /etc/hosts
```
and correct the IP address to 57.35.6.10.

6. **Whenever you type "ntsysv" to enable/disable a network service**, you MUST type
```bash
/etc/init.d/xinetd restart
```
before proceeding. If you do not do this, the changes you made will not take effect.

7. **Try and debug your issues as much as possible.** If you are having connection trouble, open up Ethereal and try figure out what is going on. The nature of the packets you capture will typically give you an indication of what is happening. For example, if you are trying to telnet and you are unable to, you may see [RST, ACK] packets in Ethereal. This is an indication that the telnet server has not been enabled.

**GOLDEN RULE #1:** If you have any kind of connectivity issues, always check your IP address and the default gateway first. Make sure machines can ping each other. Try to ping 57.35.6.10 (the NAS server).

**GOLDEN RULE #2:** Always keep a copy of Lab 1 with you when you are working in lab. If you ever have to re-install anything (including virtual machines), then useful installation/configuration information can be found in Lab 1. Please read Appendix H of Lab 1. It contains valuable tips for using Linux, including some commands that are used often.