

26 August 2015 lecture notes for CS 485/ECE 440/CS 585

Don't begin until you know your student number. Your student number will be a number between 10 and 60 (there are 51 students and I started counting at 10 because having a student #1 will look funny when we start claiming subnets). Let's call your student number Y for the rest of this document. My student number is 9. Always replace Y or 9 with your own number

Pick three clever names for your three virtual machines. I'm picking "moe", "larry", and "curly". The router will be "moe" because he's the leader of the Three Stooges. You should always use lowercase letters for hostnames, don't capitalize anything when doing networking on UNIX systems unless you have a good reason to.

First, create the three virtual machines, using ports 10000+Y, 20000+Y, and 30000+Y. The first virtual machine (with port 10000+Y) should be your router.

```
/nfs/faculty/crandall/Public/makevboxvm.sh moe 10009  
/nfs/faculty/crandall/Public/makevboxvm.sh larry 20009  
/nfs/faculty/crandall/Public/makevboxvm.sh curly 30009
```

Note that $10000+10 = 10010$, not 100010.

Now take a look at all three virtual machines that you created:

```
vboxmanage showvminfo moe | less  
vboxmanage showvminfo larry | less  
vboxmanage showvminfo curly | less
```

DO ONLY ONE INSTALLATION AT A TIME OR THE MACHINE WILL CRASH

Install one virtual machine at a time. In my example I'll start with moe:

```
vboxmanage startvm "moe" --type headless  
rdesktop 127.0.0.1:10009
```

Follow the defaults until you get to the point where you enter a hostname

Enter the appropriate hostname for your machine, use all lowercase letters

Say "no" to encrypting your home directory

Hopefully it guesses your time zone information correctly, if not enter it

Select "Guided – use entire disk and set up LVM", then just select "Yes" for writing changes to the disk or the default choice until it starts installing the system

Just hit enter when it asks for HTTP proxy information (we don't need an HTTP proxy)

Select "Install security updates automatically"

Check "OpenSSH server" and no others, then "Continue"

Say "Yes" to installing Grub on the master boot record

"Continue" to reboot the machine

Log in, and run:

```
sudo apt-get update  
sudo apt-get dist-upgrade
```

```
(say yes to continue)
sudo apt-get install tshark quagga tcptracertop iftop
(say yes to continue)
sudo shutdown -h now
```

Your VM should shutdown at this point, and you can do the next one. Build all three VMs by class on Friday.

Here's an example of how to work remotely (in this case I'm on a machine called "rubicon" and I'm going to work remotely on b146-40).

On rubicon type:

```
ssh -L 10009:127.0.0.1:10009 -L 20009:127.0.0.1:20009 \
-L 30009:127.0.0.1:30009 b146-40.cs.unm.edu
```

Then on b146-40 type:

```
vboxmanage startvm "moe" --type headless
```

Then on rubicon type:

```
rdesktop 127.0.0.1:10009
```

Your local machine will need an RDP client, like rdesktop ("sudo apt-get install rdesktop" on Ubuntu). If you use Windows, Google "How to ssh tunnel over putty" and then Google "Free software, free society: Richard Stallman at TEDxGeneva 2014 youtube" (whatever you do, don't Google "richard stallman foot").

NEVER EVER EVER bind Virtual Box's Remote Desktop Protocol on any IP other than 127.0.0.1. Just don't mess with your VRDE settings at all without consulting me first.

Make sure you shut down your virtual machines before you log out of the remote machine. You can make sure none are currently running using:

```
vboxmanage list runningvms
```