Virtual Machine and UNIX

What is a VM?

- VM stands for Virtual Machine. It is a software emulation of hardware.
- By using a VM, you can have the same hardware and software environment that CSUG has

How do I get it?

- The image for CSUG is at https://confluence.cornell.edu/display/coecis/CIS+UGC+Linux+Lab+VM+Information

- Follow the directions there. There is even a helpful video! If you have any questions, feel free to ask for help!

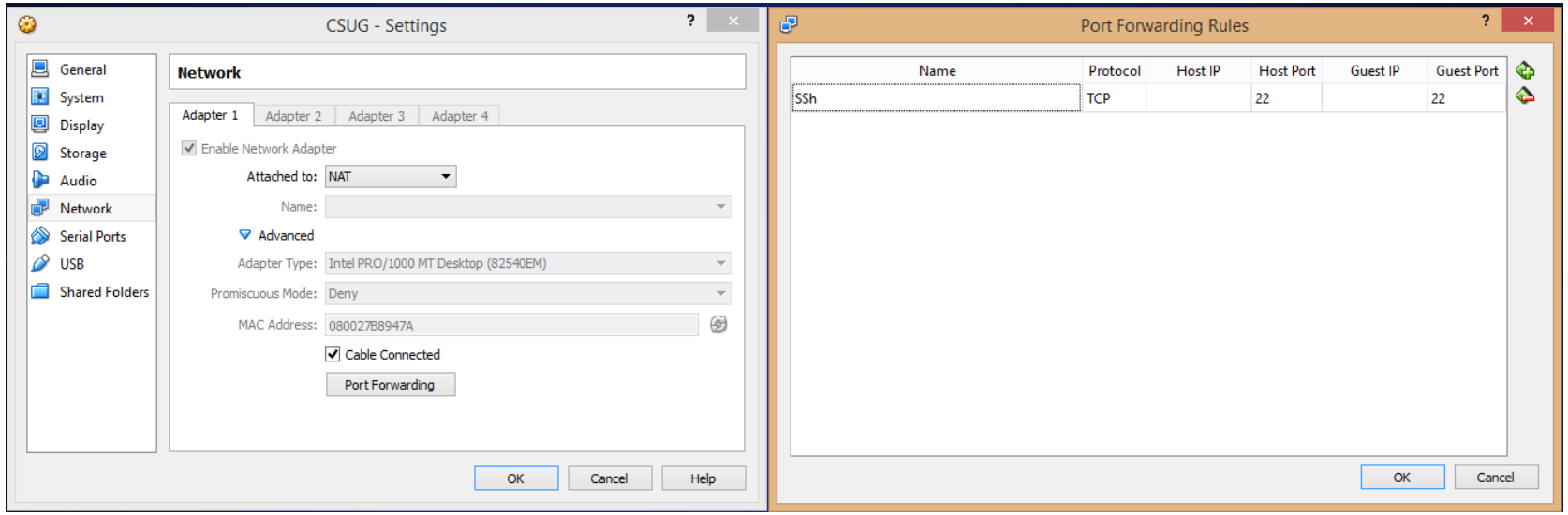
- Note: Make sure that virtualization is enabled in your BIOS.

VM Setup Checklist

- Download the image, Install VirtualBox/VMWare Player
- Import the image/setup
- Login as root (user: root, pass: csuglab)
- Create your own user AND add yourself to the sudoer's file
  - echo "foo ALL=(ALL) ALL" > /etc/sudoers.d/99_foo where foo is your username
- Login as your create user and make sure you have internet
  - Ping google.com
  - Perform an update "sudo yum update"
- If you have downloaded the GUI version, "startx" to start the GNOME
  - If you start seeing lots of File Managers, drop to shell, update and restart

Getting file to and from your VM

- Make sure that your network adapter setting is NAT (which should be default) and port forwarding is set up to forward port 22
  - Note: If you're using a Mac, you must forward to a port above 1024!
- Connecting to your VM is exactly the same as connecting to CSUG
- Time for some SSH!



SSH (Secure Shell)

- Allows you to execute commands on a remote computer (as if you were there). Your VM's host will be localhost
- Command: ssh user@host
- If you're on Windows: use Putty or Cygwin
- Specify the port by using –p #
- Hint: If you are on Mac or Linux, and your remote computer has a GUI interface, you can forward the X session (GUI) in addition to the shell by giving ssh the –X parameter

Unix Basics

- The root of the file system (think C:) is ‘/’
- Your home folder (think Documents) is ‘/home/[username]’
  - Most terminals will expand ‘~’ to be your home folder
- Your current directory shortcut is “.”
- Files and folders are case sensitive
  - CS3410 != cs3410
- Spaces MUST be quoted or escaped (unlike in CMD)
- For more info, you can take a half semester course in Unix Scripting offered every year

Basic Unix Commands

- man (p7): The Hitchhiker's Guide to the Galaxy, for UNIX
  - Your first and primary source for help on any command
- Control-c (p35): Kill the current process
  - Do NOT use Control-z as this suspends the process!
- ls (p4): lists the files in the current directory (cmd equivalent is dir)
- mkdir (p41): create a directory
- rmdir(p41): remove a directory
- pwd (p41): prints the current working directory

More Unix Commands

- rm (p39): remove files and directories
  - Note that by default you cannot remove directories with files. Use –r (recursive) to do so
  - Use –rf when you don’t care and just want things gone. BE VERY CAREFUL. No confirmation will be given.
- cp (p38): copies from source to destination
- mv (p38): move from source to destination (also used to rename)
- cat (p44): can be used to quickly display the content of a file
- less (45): view a text file will scrolling (q to quit)

Rsync (p115) and SCP (p152)

- Use to copy to and from your VM
- If you want to copy to your real local machine, you should be in a shell on your real local machine
- Cygwin provides both of these. You can also use a GUI such as WinSCP
- For example to copy from the VM to your machine (where user is your username that you created):
  - rsync user@localhost:/home/user/file .
  - scp user@localhost:/home/user/file .
- You should now be able to see “file” if you do ls

Questions?