Do anything from anywhere – tools to free your choice of OS
Lecture summary

• **Remote connections** – get to your application or resource from anywhere

• **Local options** – get your application or resource to work on your setup

• Figure out how to do what you want to do in a new environment

• **Course Evals** – Don’t forget to fill these out!
Remote Connections: to a Linux machine

- You’ve seen remote connections to a Linux machine in action
  - Departmental attu.cs.washington.edu Linux server
  - Can use ssh (or PuTTY) from anywhere – independent of location and OS
Remote Connection: to a Windows machine

What about remote connections to a Windows machine?

• RDP – Remote Desktop Protocol, Enables remote connections to a Windows box from anywhere, independent of OS.
  
  ▪ From Linux – xfreerdp or rdesktop commands, for example for user rea:
    
    
    - Note: On the CSE VM you will need to install xfreerdp. If you try to run xfreerdp it should ask you if you want to install it, say yes.

  ▪ From Windows – Remote Desktop Connection

  ▪ From Mac – “Microsoft Remote Desktop” App from Apple store

  ▪ Note: You must have an account on the Windows machine in question in order to connect to it remotely.
CSE Virtual Windows nodes

- For students with CSE accounts: The **CSE department** offers a set of hosted virtual machine nodes, imaged similar to Windows machines in basement labs, remotely accessible via RDP for people with CSE accounts. **YOU MUST USE YOUR CSE Windows PASSWORD!**
  - Pick an available node from the list of currently available nodes: [http://vdi.cs.washington.edu/vdi/](http://vdi.cs.washington.edu/vdi/)
  - **Need to use the right domain!!** CSEPCLAB\<username>
  - **Note:** Windows and Mac users must now install the Husky OnNet Package before doing a remote desktop from a non-CSE (personal) machine.
Non-remote options: **linux on Windows?**

- **Cygwin**: unix style environment within Windows
  - [https://www.cygwin.com/](https://www.cygwin.com/)
  - “package manager” is part of the install file
  - Provides the unix-like directory structure
    - Home directory is /home/<WindowsUsername>
  - Your actual windows directory structure is located at /cygdrive/<driveletter>
- Enables: quick use of linux style tools in a terminal environment in Windows
- **Windows 10**: now allows you to [install a bash shell command line](https://www.cygwin.com/)

Non-remote options: Windows on linux?

• One barrier to switching to Linux: lots of apps are built for Windows
  ▪ <Insert app here> that I use all the time isn’t ported to Linux! 😞

• **Wine** is an attempt at solving this
  ▪ Provides an environment to run Windows applications in Linux
    • [http://www.winehq.org/](http://www.winehq.org/)
  ▪ Open source
  ▪ Not perfect, but many people have good success with major programs
    • Many successfully run WoW, MS Office, TextPad...

• Lots of online tutorials / message boards / instructions to get your favorite app working in Linux
Another barrier to using Linux as your main Desktop OS: “I don’t know how to do <X> in Linux”

- Imagine you had never seen or used Windows before. Would you somehow intuitively know how to:
  - Change your desktop background/resolution?
  - Install new graphics card drivers?
  - Change system settings? (Control Panel? What’s that?)
  - Etc etc...

- So how do you figure it out?
  - Ever read the Windows manual? (hint: there is no “the” manual)
    - “Windows 7 Product Guide” -- 140 pages, considered very high level
    - “Windows 7 for Dummies” -- 432 pages
    - “Windows 7 Bible” -- 1248 pages
  - What do you do when you don’t know how to do something?
Dear various parents, grandparents, co-workers, and other "not computer people."

We don’t magically know how to do everything in every program. When we help you, we’re usually just doing this:

Please print this flowchart out and tape it near your screen. Congratulations; you’re now the local computer expert!

Courtesy XKCD
The More You Know™

• Step 1: Try and explore intuitively
  ▪ Hey, you’re CSE majors. Where would *you* put that setting if you were designing the system?

• Step 1.5: Look in short, directly relating references
  ▪ Man pages, quick start guides, the TOC in the manual (if exists...)

• Step 2: If that fails, search online!
  ▪ Likely someone else has wanted to do what you want, and *also* couldn’t figure it out
    • And, likely they’ve posted to a discussion board and had some guru give a detailed response
    • Or, a FAQ has been written somewhere that tells you how
Mix and match

- Don’t think of Linux/Windows as a binary choice
- These tools provide a continuum of options
  - Windows
  - Windows + Cygwin
  - Windows + Cygwin + Linux VM
  - Linux + Windows VM + Wine
  - Linux + Wine
  - Linux

- Can choose the setup that best suits your situation and application requirements
The choice is yours

• To clarify: the purpose here was not to say “you should switch to Linux as your main OS”
  ▪ But, you should know what tools and options exist, and be able to use Linux as your main OS if desired
  ▪ You should be able to survive if someone locked you in a closet with a laptop that had Fedora or Ubuntu

• Wrap up discussion:
  ▪ What tools seem the most useful that you learned this quarter?
    • What tools seem like they address important areas, but need to be better?
  ▪ From your experience, are there other tools you think you’d mention in this course, tools CSE majors should be aware of?
    • Linux commands/tools, programming development tools...