CSC 361 Lab Session 1

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Agenda

1. Introduction of Linux GUI interface
2. How to use the router

Linux GUI interface

- Open your home folder from GUI
- Available applications in Linux
- Open a text editor from GUI
- Open a console

Basic Linux commands

- **ls** - list directory contents
- **cd** - change directory
- **mkdir** - make directories
- **cp** - copy files and directories
- **mv** - move (rename) files
- **rm** - remove files or directories
- **man** - an interface to the reference manuals
- more commands - `http://www.techtutorials.info/lcommands.html`
- online manpage - `http://linux.die.net/man/`

Text editors in Linux

- **Emacs** - an extensible, customizable text editor
- **Text Editor (gedit)** - the default text editor in Linux
- **vi/vim** - screen-oriented text editor

Compile and run your C/C++ program in Linux

- **gcc** C compiler
- **g++** C++ compiler

example:

gcc -o hello hello.c or *g++ -o hello hello.cpp*

- create a new c/c++ file with your favorite text editor
- write a c/c++ helloWorld program
- compile and run your program
- debug your program with **gdb**!

Remote login to this lab

- Remote login:

Command:

ssh -l<username> <host> or *ssh <username>@<host>*

- Remote copy file:

Command:

scp <user>@<from_host>:<dir> <user>@<to_host>:<dir>

For Windows/MacOS user:

- Download SSH client software: PuTTY, PuSFTP, WinSCP.

Access the router

- Router interfaces
  - LAN: 192.168.1.1, port 1–4
  - WAN: 10.10.1.1, port *Internet*
- LED lights on the front panel
  - Power: ON when router is up
  - WLAN: OFF (no wireless by default)
  - Ethernet(1–4): ON when Ethernet cables are plugged
  - Internet: ON when Ethernet cable is plugged in
- Desktop interfaces
  - eth0: 192.168.1.100
  - eth1: 10.10.1.100
  - eth2: 142.104.72.xxx

Login the router

- Login into the router:

Command

```
ssh csc361@192.168.1.1
```

- Password: ecs360

Show/set IP address

- *ifconfig*: display the configuration of a network interface.

Command

ifconfig [interface]

- Display interface configurations

Command

ip addr show dev <interface>

Show/set route

- route: show routing configuration

Command

route [-n]

- Use command *ip* to display the route table

Command

ip route list

tcpdump: packet sniffer

- Basic command:

Command

tcpdump -i<interface> [options] [filter]

- Options:
  - verbose mode: -v, -vv, -vvv
  - no name resolution: -n
  - write dump to file: -w <trace>
- Filter
  - host: host <ip address>
  - protocol: tcp, udp, etc.
  - port: port <port>
  - logic operators: not, and, or

Example

tcpdump -ibr0 -w temp.cap not tcp port 22

Note: here we try avoid capturing ssh traffic on port 22!

nc: TCP/IP swiss army knife

- Basic command:

Command

nc -p port [-options] [hostname] [port]

- Options:
  - -l: to listen for an incoming connection
  - local port number: -p port
  - local source address: -s addr
  - verbose mode: -v, -vv
  - timeout for connects: -w secs
  - UDP mode: -u

Example: Server Side

nc -l 31338

Example: Client Side

nc -p 31337 -s 192.168.1.100 10.10.1.100 31338

How does sws work?