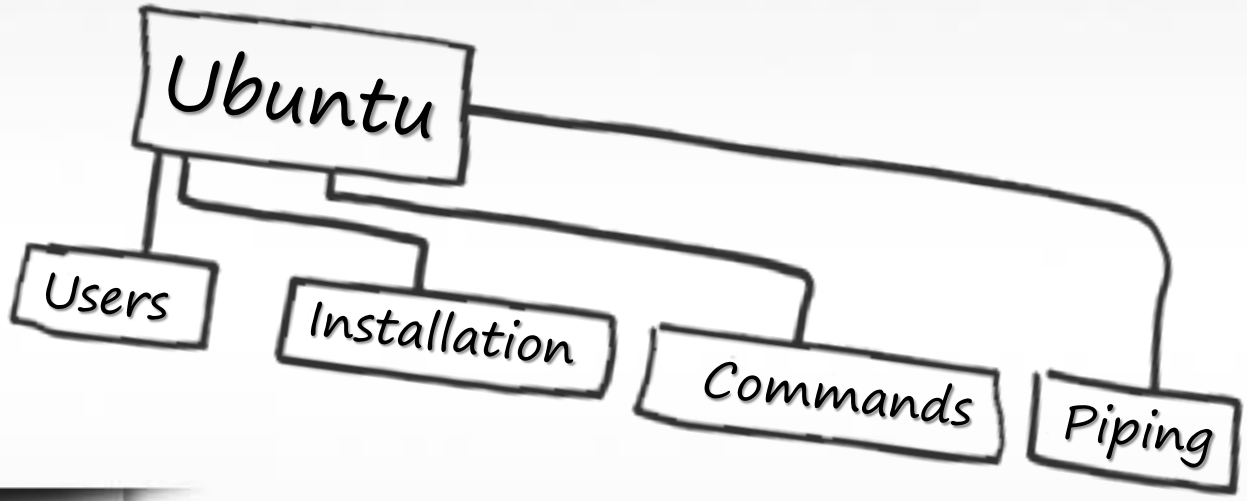
NOW

Ubuntu Fundamentals

ubuntu



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Course Materials

You can access the course materials via this link

http://goo.gl/MZqU4b

Day 3 Contents

- Network Configuration
- Initialization Files.
- Environment Variables

Setting/Changing The hostname

- The `hostname` command allows you to directly query, or set, the hostname from the command line.

- Make sure you change the `/etc/hosts` file first

Network Interfaces

- Interface names
  - `eth0`
  - `eth1`
  - `eth2`
- To list the interface names for all NICs on your computer
  - `ls /sys/class/net`

  or
  - `ifconfig -a`
- To view MAC address
  - Use ifconfig command
  - Examine the output from the device driver (kernel module) as it was loaded
  - `# dmesg | grep eth#`
  - `# grep eth# /var/log/dmesg`

Network Interfaces Commands

- The ifconfig command displays and configures IP addresses on network interfaces.

- To display the network settings of all active network devices

```
# ifconfig
```

- To see both active and inactive network device setting

```
# ifconfig –a
```

- To bring up or down a network interface

```
# ifdown eth0
# ifup eth0
```

Configuration Utilities

- To configure IP addresses on network interfaces

```
sudo ifconfig eth0 0.0.0.0 down
sudo dhclient eth0
sudo ifconfig eth0 192.168.1.14 up
sudo route add default gw 192.168.1.1
```

Configuration Utilities cont'd

- Most configuration is centralized in a single file /etc/network/interfaces

```
# This file describes the network interfaces available on
your system
# and how to activate them.

# The loopback network interface
auto lo
iface lo inet loopback
address 127.0.0.1
netmask 255.0.0.0

## To configure a dynamic IP address
auto eth0
iface eth0 inet dhcp
```

Configuration Utilities cont'd

- ## Or configure a static IP

```
auto eth0
iface eth0 inet static
   address 192.168.1.14
   gateway 192.168.1.1
   netmask 255.255.255.0
   network 192.168.1.0
   broadcast 192.168.1.255
```

- For these settings to take effect you need to restart your networking services:
- sudo /etc/init.d/networking restart

Configuration Utilities cont'd

- Setting up a second IP address or Virtual IP address

```
sudo vi /etc/network/interfaces
auto eth0:1
iface eth0:1 inet static
address 192.168.1.24
netmask 255.255.255.0
network 192.168.1.1
broadcast 192.168.1.255
gateway 192.168.1.1
```

Configuration Utilities cont'd

- To specify your DNS server manually in `/etc/resolv.conf`

```
nameserver 192.168.0.1
nameserver 4.2.2.2
```

IP Forwarding

- IP forwarding allows a system to forward IP packets from one network to another
- This feature turns a computer into a router
- This behavior is controlled by the `/proc/sys/net/ipv4/ip_forward` file, if the value is 1, forwarding is enabled, if it is 0, forwarding is disabled.
- To enable IP forwarding so that it will be enabled automatically after each reboot, modify the `/etc/sysctl.conf` file

Client-side DNS configuration

- DNS is responsible for associating hostnames with IP addresses

```
# more /etc/resolv.conf
```

  - nameserver 213.131.65.20
  - nameserver 163.121.12.2

- Local name resolution can eliminate the need for DNS look-ups by modifying the `/etc/hosts`

```
# host hotmail.com
```

- hotmail.com has address 64.4.20.169

```
# nslookup hotmail.com
```

  - Server: 10.210.200.17
  - Address: 10.210.200.17#53

  - Non-authoritative answer:
  - Name: hotmail.com
  - Address: 64.4.20.17

Use network diagnostic tools

- The `ping` command is a network packet loss and latency measurement tool
- The `traceroute` command will attempt to show the network packets' router path between the local system and a remote system.
- The `netstat` command is a multi-purpose network information tool. It shows information about network connections to and from the local system

Global Initialization Files

- `/etc/profile`
  - This file gets executed whenever a bash login shell is entered as well as by DisplayManager when the desktop session loads.
- `/etc/bash.bashrc`
  - This is the system-wide version of the ~/.bashrc file. By default this file is executed whenever a user enters a shell or the desktop environment.

Initialization Files

- `~/.profile`
  - It gets executed automatically by DisplayManager during startup process desktop session as well as by the login shell when on logs-in from the textual console.
- `~/.bash_profile` or `~/.bash_login`
  - If one of these file exits, bash executes it rather than "~/.profile" when it is started as a login shell. (Bash will prefer "~/.bash_profile" to "~/.bash_login"). However, these files won't influence a graphical session by default. Only the .profile works in the GUI but the others in the command line

Startup Files

- `~/.bashrc`
  - By default this file will be executed in each and every invocation of bash as well as while logging in to the graphical environment.

Environment Variables

- `$HOME`
  - Complete path of the user home directory
  - Example
    - `mkdir $HOME/file1`
- `$PATH`
  - A colon-separated list of directories used by the shell to look for executable program names
  - Example
    - `echo $PATH`

      /usr/bin:/bin:/usr/local/java/bin

Environment Variables Cont'd

- `$PWD`
  - The user current working directory
- `$SHELL`
  - Path name of the login shell
- `$USER`
  - Currently logged in user
- `$HOSTNAME`
  - Name of the computer

Viewing variable contents

- The shell assumes whatever follows the dollar sign ($) in the command line is a variable and substitutes its value
  - `echo $HOME`

    /home/user

- To view the contents of all variables by running the `set` command

Command Alias


```
alias l.='ls .* '
alias ll='ls -l '
alias ls='ls '
```

- Type `alias` at the terminal to see all set aliases
- **Remove aliases**

`unalias` command

- **Bypass aliases**

```
alias ls='ls -AF'
/usr/bin/ls
\ls
```

Commands History

- bash stores a history of commands you have entered so that you can recall them later.
- The history is stored in the user's home directory and is called `.bash_history` by default.
- You can recall commands by pressing the up arrow key
  - !!
    - Repeats the last command.
  - !string
    - Repeats the last command that started with string.
  - !n
    - Repeats a command by its number in history output.
  - !-n
    - Repeats a command entered n commands back.

Commands History

- ^old^new to repeat the last command with old changed to new. For example,
  - `$ cp file1  /usr/local/src/project`
  - `$ ^file1^file2`
- You will get the output:
  - `$ cp file2.c /usr/local/src/project`