

KUBH/GH Network Training

Network_Administration_101

Day 2

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Training Contents

- Introduction to Networking [1]
- Clamping & Network Devices[2]
- Centos Installation & Basic Linux Commands[3]
- Commands & Configuring Network[3]
- DHCP Server[2]
- Web & FTP Server[1]
- DNS & Proxy Server[2]
- Bandwith Management [1]
- Securing Server with Firewall & NAT [2]
- Remote Network Administration[1]
- Bash Scripting [3]
- Mikrotik-First Time Access[1]
- IP,DHCP,NAT (masquerade) [1]
- Wrap-up[1]

Day 2

- Why Linux ?
- Centos Installation
- Getting Started with CentOS
- Basic Linux Commands
- Configuring Networks

Why Linux ?

- Linux Vs Windows

Expensive

Validation Checks

Unstable & Insecure

Blue Screen of Death

Resource Hogs [More Ram,
HD etc]

Extremely Fast

Efficient Allocation of
Resources

No Viruses

Large Community Help

Everything Free

Uses of Linux



NCAR's newest supercomputer: On 12 July 2004, SCD took delivery on lightning, a new Linux cluster manufactured by IBM. The 1.1-teraflop system is now installed in the NCAR Computer Room

Motorola RAZR², an advanced embedded system using embedded Linux



The Nokia N810 features the Maemo Linux distribution,[2] based on Maemo 4.0, which features MicroB (a Mozilla-based mobile browser), a GPS navigation application, new media player, and a refreshed interface.



The WRT54G is notable for being the first consumer-level network device that had its firmware source code released to satisfy the obligations of the GNU GPL.

Ubuntu Linux on Macbook Pro



Flavors in Linux

- Open Suse
- Fedora
- Knoppix
- Ubuntu
- Puppy Linux
- Protech
- Slackware , etc



Networking With Linux

- Unix Initially developed for Networking
- Lots n lots of tools for networking
- Large community support
- Absolutely free
- Highly secure
- Frequent Updates

Centos Installation

- Requirements
 - Separate Partition/VHD
 - USB Drive 4 GB
- Centos 6.5

Lets get start with Linux Commands

- General Commands
- Basic I/O
- Grep & regular expressions
- Accessing Remote Systems
- Archiving & Compressing
- Runlevels
- Process Management
- Network sevicees
- FileSystems
- Permissions
- ACL
- User Management
- Configuring Network
- Package Management
- Scheduling Jobs
- Firewall
- SELinux

General Commands

- Ls : List files
- Cp/mv : Copy & move/rename files
- Rm : Delete files
- Cd : Change directory
- Pwd : Print current directory name
- Mkdir/rmdir : Create/delete directory
- Cat : view files
- Head/tail : view top/bottom 10 lines of file

Basic I/O

- **STDIN(0)**
 - `$ read MESSAGE < afile`
 - `$ echo MESSAGE`
- **STDOUT(1)**
 - `Ls > afile`
- **STDERR(2)**
 - `Ls invalid_folder 2> afile`
 - `Ls > afile 2>&file2`

Regular Expressions & Grep

- Grep <searchterm> <fromwhere> or STDIN
- Searchterm can be regex
 - * term repeats 0 or more times
 - . any single character but not end of line
 - [] any of items or range in brackets
 - ^ term at begin of line
 - \$ term is at end of line
- Grep test.g afile grep ^sh afile grep \$t afile
- Grep [0-9] afile grep ^[0-9] afile

Accessing Remote Systems

- VNC (Virtual Network Computing) – GUI , not encrypted
- SSH (Secure Shell) -22 port , encrypted
 - Ssh `abgeek@geeknepal` -p 222
 - Ssh -X `abgeek@geeknepal`
 - Scp test -r `abgeek@geeknepal:/home/user1`
- Su -l test

Archiving & Compressing

- Archiving is like collecting while compressing is collecting & compiling
- Archiving (tar,star[support ACL SELinux])
 - Tar -cvf afile.tar afolder/
 - Tar -xvf afile.tar
 - Tar –selinux –xattrs –acls -cvf afile.tar afolder/
- Compressing (gzip,bzip2)
 - Zip -r afile.zip afolder/
 - Gzip file.zip afolder/ gunzip file.tar
- Tar -zcvf file.tar.gz afolder

Manuals

- Man
- Man -k
- Apropos
- Whatis
- Info
- VI editor

Runlevels

- /etc/rc

0 : halt

1 : single user mode

2: multiuser , no network

3: multiuser, with network

4: no used in Centos

5: multiuser,network : X windows

6: reboot

- Switching runlevels : telinit 5

- Default runlevel : *abgeek@geeknepal:~\$ vi /etc/inittab*

id:5:initdefault

Process Management

- Listing process : top
- Killing process : kill -9 PID
- Pgrep before pkill is wise
- Killall -9 firefox
- Pkill -9 pattern eg. Pkill -9 fox
- Ps -ef #full list of all programs
- Nicing
 - -20 highest priority[fastest], 0 default,19 lowest [slowest]
 - Nice -n 19 firefox
 - Renice -n 20 PiD #changing nice level

Network Services

- Startup files : /etc/init.d/xxx
- #service xxx start/stop/status/restart
- Chkconfig –list <servicename>
- Chkconfig httpd on # on runlevel for httpd
- Chkconfig httpd on –level 35 # make on for runlevel 3 and 5
- /var/log
 - Tools : tail -f , less , more , grep ,cat, tail
 - Tail -50 messages

File Systems

- Ext4 Journal File System
 - Caches in memory and keep track of it
- Mount -t <type>
- Encryption
 - LUKS (Linux Unified Key Setup)
 - #cryptsetup luksformat /dev/sda2
 - #cryptsetup luksopen /dev/sda2 enc_drive
 - #mkfs.ext4 /dev/mapper/enc_drive
 - #mount /dev/mapper/enc_drive /mnt/home
 - Cryptsetup luksclose enc_drive /dev/sda2

File Systems

- Auto mount : /etc/fstab
- Auto decrypt : /etc/crypttab
- Mount NFS : mount -t nfs domain:path

Permissions

- Permission bits : rwxrwxrwx [Owner,Group,Others]
- $R = 4$, $W = 2$, $X = 1$
- Chmod u+rx afile
- Chmod 600 afile
- Chown user.group file/folder
- Chgrp user file/folder
- ACL
 - Getfacl <filename>
 - Setfacl -m u:abgeek:rw afile
 - Setfacl -m d:u:abgeek:rw #default acl