Quick Reference Card 2 Course Foundations of Linux Networking

Multi user environment

	#Tip: Do not start X as root
<ctrl-alt-f1>	#Goto tty1 (or F2, F3, F4, F5, F6) from X
<alt-f2>	#Goto tty2 (or F3-F6) from char.terminal
<alt-f7>	#Goto X (if started) from char.terminal
su -	#Login as root (with environment)
su - username	#Login as username
sux -	suse #Login as root (with environment, incl. X)

Hot Keys

<ctrl-c>	#Break
<ctrl-l>	#clear screen
<ctrl-d>	#logout or exit
<ctrl-alt-backspace>	#Restart X
<ctrl-alt-esc>	#Kill next X window by mouse click (KDE)
Systemmenu, Personal Settings, Shortcuts (Novell Linux Desktop or Ximian)	

Command line Knowledge

#program files do not need an extension such as .exe
#directories use / instead of \   #(often no drive letters)
#commands & filenames are case sensitive
#help with: cmd --help
#prefix ./ to start a program located in the current directory
#.files are hidden (starting with a dot)

command -options parameters	#General command syntax
...<tab>	#Automatic cmd completion (WinXP)
...<tab><tab>	#Completion for cmd & file choices
...<page up>	#Browse through cmd history (suse)
history	#Show personal cmd line history
!5	#Start command 5 from history
cmd1 ; cmd2	#Use ; for cmd concatenation
#man, info, which, type, whereis, apropos	
ls /etc ¦ less	#less is more
ls /etc ¦ grep -i fstab	#Filter output using grep and ignore case
nohup cmd	#Leave cmd running aft logout (hang up)
	#such as the screen package
cmd &	#Start cmd in background (running)
<ctrl-z>	#Set program into background (stopped)
jobs	#Show background programs
bg [nr]	#Start background program (running)

Mounting

vi /etc/fstab	#Mounting at boot time
//srv/share /mnt/dir smbfs defaults,username=nobody 0 0	
172.28.0.111::/data /mnt/data nfs soft,bg,intr 0 0	
mount -a	#Mount all stuff from /etc/fstab
mount	#Show mounts (equals to: cat /etc/mtab)
smbclient -L server -U user	#List smb shares for User. Mount smb:
mount -o username=beavis //srv/share /mntdir	
mount server:/exportdir /mntdir	#Mount nfs share
mount /dev/cdrom /media/cdrom	#Not necessary with subfs
umount /dev/cdrom	#Not necessary with subfs, just eject CD
mount /dev/hda1 /mntdir	#Mount first partition in /mntdir
mount -o loop file.iso /dir	#Open .iso file directly in /dir

Troubleshoot network environment

ping host	#Check using ICMP. Stop with <ctrl-c>
ifconfig	#or /sbin/ifconfig

cat /etc/resolv.conf	#Show DNS server in use
route	#Show routes & default gateway
netstat -r	#Show routes & default gateway
netstat -antp	#Show listening tcp ports
netstat -anup	#Show listening udp ports
nmap -v -A 172.28.21.1-254	#Show exposed ports on host(s)
host ns.nl	#Check name resol. via DNS-srv in use
host -a ns.nl	#Check all
dig nu.nl	#Check name resol. via DNS-srv in use
dig @4.2.2.1 nu.nl	#Check name resol. via other (@)DNS-srv
mtr www.whitehouse.com	#Show continuous traceroute
traceroute www.whitehouse.com	#Check route using ICMP
ntptrace; ntpq -p	#Check timesync (Wait 5 minutes aft sync)
ntpdate ntp.xs4all.nl	#Sync time once. First stop ntp daemon:
/etc/init.d/xntpd stop or	/etc/init.d/ntpd stop

Daemon configuration files and start scripts in /etc/init.d/

vi /etc/ntp.conf	#/etc/init.d/xntpd or ntpd time sync
server ntp.xs4all.nl	#Comment out the next fudge line
vi /etc/samba/smb.conf	#/etc/init.d/smb #'Windows' server
#Remove ; or # in front of example [share]	
smbpasswd -a username	#Create samba user
vi /etc/exports	#/etc/init.d/nfs (redhat), nfsserver (suse),eg:
/var/ftp/pub 172.28.0.0/255.255.0.0(ro,sync)	
exportfs -r	#Reread configuration file (/etc/exports)
showmount -e host	#Show nfs exports (shares) on host
vi /etc/mail/sendmail.mc	#/etc/init.d/sendmail
#To enable receiving Internet mail, add dnl at the start of line:	
DAEMON_OPTIONS('Port=smtp, Addr=127... #Macro creates config file:	
m4 /etc/mail/sendmail.mc > /etc/mail/sendmail.cf	
sendmail -d0 < /dev/null	#Check hostname configuration
vi /etc/http/conf/httpd.conf	#/etc/init.d/httpd or apache or apache2
DocumentRoot /var/www/root/ or /var/www/htdocs	
echo "My Site">index.html	
vi /etc/apache2/httpd.conf	
DocumentRoot /srv/www/htdocs	
vi /etc/cups/cupsd.conf	#/etc/init.d/cups
Allow From	172.28.0.0/255.255.0.0
BrowseAllow from	@LOCAL
BrowseAddress	@LOCAL

Vi Summary

i	#Goto insert mode. Insert behind cursor
o	#Goto insert mode, open new line below
<escape>	#Goto command mode
:wq	#Save and quit (write & quit)
:wq!	#Save and quit, overwrite ro file (as root)
:x	#Save and quit (exit)
<shift>ZZ	#Save and quit (Zie Zo, Klaar)
:q	#Quit
:q!	#Quit without save
/searchtext	#Press <enter>, and <n> (next)
5YY	#Yank (copy) 5 lines to clipboard
P	#Paste (p)
u	#Undo
5dd	#Delete 5 lines
x	#Delete character

Scripting

vi scriptfile.sh	
#!/bin/bash	#First line: 'she bang bin bash'
exit 0	#Last line: exit code. See: echo $?
chmod +x scriptfile.sh	#Add execute permissions for everyone
./scriptfile.sh	#Start script in current directory (./)

User and group management

useradd -m user	#Create user (/etc/passwd) and homedir
#homedir is copy of /etc/skel/	#Other defaults are in /etc/default/
passwd user	#Create password for user (/etc/shadow)
userdel -r user	#Remove user and homedir (-r)
groupadd group	#Create group in /etc/group
usermod -G group(s) user	#Make user member of secondary groups
chgrp groupname file¦dir	#Change group owner of file or directory
chown username file¦dir	#Change user owner of file or directory
whoami	#Resolve identity crisis
id	#Show user and group id's (belonged to)
groups	#Show group memberships
who	#Show logged on users (userlist)
w	#Show userlist and used programs

Permissions

ls -l or ll	#List files and mode-fields (permissions)
#rwx rwx rwx	#Permissions for usr owner, group, others
#r is readable, w is writable, x is executable (file) or right to enter directory	
#r is 4, w is 2, x is 1	
chmod 0750 file¦dir	#Set rwx (7) for usr owner,
	#rx (5) for group, - (0) for others

#SUID on file: s, 4000, Set User ID, Start file with permissions of owner
#SGID on dir: s, 2000, Set Group ID, New files in directory owned by group
#Sticky bit on dir: t, 1000, Only owner can delete or rename files

chgrp group file¦dir	#Set group owner of file or directory
getfacl file¦dir	#Get ACL of file or directory
setfacl -m u:user:rwx file¦dir	#Set ACL of file, directory for user, group

Start and Stop

	#UNIX System V runlevels 0-6:
init 0	#Stop computer, shutdown -h now ; halt
init 1	#Goto single user mode
init 3	#Goto full multiuser mode (no X)
init 5	#Start X
init 6	#Restart, reboot ; shutdown -r now
telinit <nr>	#Same as init <nr>
startx	#Start X from character mode
gdm ¦ kdm ¦ xdm	#Start display manager (X logon)
runlevel	#Show former&current runlevel (N=none)
vi /etc/inittab	#Change default runlevel:
id:3:initdefault	#Find this line and change the nr
vi /etc/profile	#Change systemwide variables (umask suse)
vi /etc/bashrc	#Change systemwide settings, e.g. umask
vi /etc/rc.local	#Change systemwide 'autoexec.bat'
vi /etc/init.d/boot.local	#Change systemwide 'autoexec.bat'
vi /etc/inputrc	#Change systemwide terminal settings
set bell-style none	#Set alert bell off, or: xset b off
vi ~/.bashrc	#Change personal startup script
vi ~/.bash_profile	#Change personal variables, e.g. $PATH
vi ~/.xinitrc	#Create personal startup script for X

chkconfig --list	#List services (daemons) in all runlevels
chkconfig service 35	#Enable service in levels 3 and 5 suse
chkconfig service --level 35 on	#Enable service in levels 3 and 5 suse
update-rc.d	debian #Edit runlevels
/etc/init.d/service start ¦ stop	#Start or stop a service (daemon)
#Options are:	#start ¦ stop ¦ restart ¦ reload ¦ status
service service start ¦ stop	#RedHat trick (service is /etc/init.d/$1 $2)
rcservice start ¦ stop	#SuSE trick (rc... is /etc/init.d/...)
ps aux ¦ less	#Show process status including PID's
pstree ¦ less	#Show process status tree using names
kill [-15] PID	#Kill process using a PID nr and signal:
	#1 HUP (hangup, reread config file)
	#2 INT (<ctrl-c>)
	#3 QUIT (core dump)
	#9 absolute KILL
	#15 TERM (default, close normally)
killall [-15] processname	#Kill process using a processname
grub-install /dev/hda	#Inst. bootldr in MBR of master IDE-dsk

Schedule tasks

at 12:00	#Schedule task once. <ctrl-d> to finish
crontab -e user	#Edit user crontab. 5 time fields:
	#minutes(e.g. */2) hour dom month dow
vi /etc/crontab	#Edit system crontab

Troubleshooting & Status tools

top	#Continuous cpuinfo, memory (M), tasks
watch cat /proc/meminfo	#Show memory every 2 sec
cd /var/log; tail -f messages ...	#Show continuous logfile(s)
dmesg	#Show kernel ring buffer
less /var/log/dmesg	#Show bootlog messages (q for quit)
cat /var/log/boot.log	suse #Show bootlog messages

Locate files

locate namepart	#findutils-locate package needed
updatedb	#Runs every night (cron job for locate)
find . -name *namepart*	#Find filenames with namepart in it
	#Starting in . (current directory)
find . -perm +6000 -uid 0	#Find any (+) 4000¦2000 perm. for root
find . -perm -2	#Find only (-) 'world writable bit'
grep -r '192.168.1.1' /etc	#Find filenames containing 'txt'

Install VMware tools

<ctrl-alt-f2>	#Switch from X to a character terminal
#Login as root	
#VM-menu, Install VMware tools and check availability (ls /media/cdrom)	
tar -zxvf /mnt/cdrom/v<tab>	#or tar -zxvf /media/dvd/v<tab>
cd v<tab>; /v<tab>	#Start installer in subdir
#Answer most questions about directories with <enter>	
#You are not required to answer yes for gcc availability. Answer no and only	
#the host/guest file system shared directory will not work (/mnt/hgfs)	
<alt-f1>	#Switch from char. terminal to X
<ctrl-alt-backspace>	#Restart X and load new display settings
vmware-config-tools.pl	#Change display settings again from tty
#5+5% discount at vmware.com	#Discount code: ROBZON047
	#educational licenses at:
	#info@ovec.nl