System Commands		
shutdown	bring the system down	shutdown -h now ← -h = Halt or poweroff after shutdown
		shutdown -r now ← -r : Reboot after shutdown
		shutdown -r -F now ← -F : Force fsck after reboot.
halt	stop the system.	halt
reboot	reboot the system.	reboot
init		init 1 #change to single usermode
uptime	Tell how long the system has been running.	uptime
runlevel	find the previous and current system runlevel.	runlevel
printenv	print all or part of environment	printenv
env	run a program in a modified environment	env
hostname	show or set the system's host name	hostname ← show the system's host name
		I recommend uname -n for check hostanme.
		hostname NEWHOSTNASME ← set the system's host name
uname	print system information	uname -a ← print all information (=uname --all)
		uname -n ← show the system's host name (=uname --nodename)
locale	Get locale-specific information.	locale
		locale -a |grep -i ja <- -a : --all-locales
Process Management		
ps	report a snapshot of the current processes.	ps aux |grep httpd ← Check httpd rocess
		ps aux	grep XXX	awk '{print $2}'	xargs kill -9
		ps auxwf
		ps auxwf |grep XXX
pgrep	look up processes based on name and other attributes	pgrep -f 'bash'
		pgrep -lf 'bash' ← output with process name
		pgrep -f 'bash'	xargs kill
pstree	display a tree of processes	pstree -a
pidof	find the process ID of a running program	pidof httpd
		/bin/kill $(/sbin/pidof qmail-popup)
kill	send a signal to a process	kill -9 PID ← (-9 or -KILL = force-quit)
pkill	signal processes based on name and other attributes	pkill -f 'bash'
		pkill -u user1
		pkill java
		pkill -f jar
killall	kill processes by name	killall vi

			killall -i vi ← -i = Interactively
			killall -HUP kterm
killproc			
lsof	list open files		lsof -i
			lsof -i -P ← no port names
			lsof -i :80,443 ← Which process is using Port 80,443
Ctrl + C	Stop running process		
Ctrl + Z	Suspend running process		**Move Running Process to Background**
			1. ctrl + z
			2. jobs
			3. bg
			4. disown %JOBID
jobs	The first form lists the active jobs.		jobs -l ← List job
fg	Resume jobspec in the foreground		
bg	Resume each suspended job jobspec in the background		
nohup	run a command immune to hangups, with output to a non-tty		nohup command.sh &
disown			disown %jobid
nice	run a program with modified scheduling priority		nice -n 19 test.sh
			nice -n 19 ionice -c 3 CMD
			nice -n 19 ionice -c 2 -n 7 COMMAND
renice	alter priority of running processes		renice 19 -p PID
			you can check the nice whith "top" or "ps alx".
ionice	sets or gets process io scheduling class and priority		ionice -p PID ← check
			ionice -c 3 -p PID
			nice -n 19 ionice -c 2 -n 7 COMMAND
Schedule			
crontab	maintain crontab files		crontab -l ← -l = list user's crontab
			crontab -u USER -l
			crontab -e ← -e = edit user's crontab
			crontab -u USER -e
at	queue jobs for later execution		echo "/sbin/shutdown -h now" |at 21:00 02/30/2009
			at -t 200902302100
atq	lists the user's pending jobs		atq
atrm	delete jobs for later execution		atrm JOBID
watch	execute a program periodically, showing output fullscreen		watch ntpq -p ← By default, the program is run every 2 seconds
			watch -n 1 ntpq -p ← 1 seconds interval
			-d : highlight the differences between successive updates
etc			

alias	Alias with no arguments or with the -p option prints the list of aliases	alias ← check all alias
	When arguments are supplied, an alias is defined for each name whose value is given.	alias ls='ls -la --color=auto'
		alias grep='grep --color'
unalias	Remove each name from the list of defined aliases.	unalias COMMAND
	If -a is supplied, all alias definitions are removed.	
ntpdate	set the date and time via NTP	ntpdate -b -u IP
		-b : Force the time (step mode)
		-u : If you are running ntpd, "-u" must be added.
chronyc	command-line interface for chronyd	chronyc sources
		chronyc sources -v
		chronyc sourcestats ← check offset
		chrony makestep ← Correct the time
ntpq	standard NTP query program	ntpq -p
		-p : Print a list of the peers known to the server
		watch -n 1 ntpq -p
hwclock	query and set the hardware clock (RTC)	hwclock (-r) ← Read the Hardware Clock and print the time on standard output.
		hwclock -w ← Set the Hardware Clock to the current System Time.
		hwclock -s ← Set the System Time from the Hardware Clock.
man	an interface to the on-line reference manuals	man COMMAND
whatis	display manual page descriptions	whatis KEYWORD
		whatis cat
		whatis vi
history	GNU History Library	history |less
		history 5 ← lists only the last 5 lines.
		HISTSIZE=1000
		HISTTIMEFORMAT="%Y/%m/%d %H:%M:%S "
which	locate a command	which ls
		which -a bash ← -a : print all matching pathnames of each argument
time	time a simple command or give resource usage	time sleep 5
strace	trace system calls and signals	strace -t php test.php
		strace -t -o test.txt php test.php
		-t : each line of the trace with the time of day.
ltrace	A library call tracer	lltrace -o test.txt wget http://example.com/
		ltrace -p PID
		ltrace -p 3365

script	make typescript of terminal session	script -afq $LOG
File Commands		
ls	list directory contents	ls -ltrh ← -r : reverse order while sorting
		-h : with -l, print sizes in human readable format
		`ls -ltrh |less`
cp	copy files and directories	cp -p SRC DES
		cp -pi /etc/hosts{,.`date '+%Y%m%d'`}
		cp -pr SRC/ DES/ ← -r,-R : copy directories recursively
		cp -f SRC DES ← -f, --force
mv	move (rename) files	mv file1 file2
		mv dir1 dir2
		mv file1 file2 file3 DIR
rename	renames multiple files	rename .htm .html *.htm ← frm .htm to .html
		rename "" test *.txt ← add test
		rename test "" *.txt ← delete test
rm	remove files or directories	rm -rf TARGET ← -r,-R : remove directories
touch	change file timestamps	touch file1
		touch -d "2017/10/20 13:00:00" file1
ln	make links between files	ln -s SRC DES
unlink		unlink DES
wc	print newline, word, and byte counts for each file	wc -l ← -l, --lines = print the line counts
tree	list contents of directories in a tree-like format	tree -Dpuga /etc
col	filter reverse line feeds from input	man ifconfig	col -bfx > test.txt
Directory Commands		
pwd	print name of current/working directory	pwd
cd	Change the current directory	cd ← go to home directory
		cd ~/ ← go to home directory
		cd .. ← go to parent directory
pushd	Adds a directory to the top of the directory stack	pushd /var/log
		pushd `pwd`
		pushd +2 ← check pushd directory with `dirs -v` and go to No.2
		pushd +3 ← check pushd directory with `dirs -v` and go to No.3

popd	Removes entries from the directory stack.	popd
dirs	displays the list of currently remembered directories.	dirs -v
mkdir	make directories	mkdir -p /tmp/test1/test2/ ← make parent directories as needed
		mkdir -m 700 /home/user01/.ssh
rmdir	remove empty directories If you want to delete directory, you must use "rm -r DIR".	rmdir DIR
Commands to Access File Contents		
more	file perusal filter for crt viewing	
less	opposite of more	crontab -l |less
view	Start in read-only mode.	
cat	concatenate files and print on the standard output	cat /dev/null > access.log
tail	output the last part of files	tail -n 50 aaa.txt ← output the last N lines
		tail -f /var/log/messsages
tailf	follow the growth of a log file	tailf /var/log/messages
		tailf -n 50 aaa.txt
head	output the first part of files	head -n 100 aaa.txt ← -n , --lines
		<wrap hi>head * |more</wrap> ← View the beginning of the file in the directory.
diff	compare files line by line	diff --suppress-common-lines --side-by-side File1 File2
		diff /etc/test{,.`date '+%Y%m%d'`}
		diff -r dir1 dir2 ← When comparing directories, recursively compare
sdiff	side-by-side merge of file differences	sdiff -s File1 File2 ← -s : Do not print common lines.
		sdiff -s -w 200 File1 File2
colordiff		
vimdiff		vimdiff file1 file2
		vim -d file1 file2
Searching		
grep	print lines matching a pattern	grep WORD FILE |less
		grep -Ev "^#|^$" xxx.txt
		grep -Ev "^$|^#|^\s*#" file.txt
		grep . ifcfg-eth* ← check filename and contents
		grep "" ifcfg-eth* ← check filename and contents
		grep -r PATTERN --include="*.txt" DIRECTORY ← -r : recursive
egrep	egrep is the same as grep -E	egrep "aaa|bbb" file

find , xargs	search for files in a directory hierarchy	find . -name "*txt*"
		find /dir -type f -name "*.log*" -mtime +7 -exec rm -rf {} \;
		← "-mtime +7" is 7 days ago
File Compression		
tar	The GNU version of the tar archiving utility	tar zcvf test.tar.gz Dir ← Create, Verbose, File
	tar warn the order of target and destination.	tar ztvf test.tar.gz ← Test, Verbose, File
		tar zxvf test.tar.gz ← eXtract, Verbose, File
		tar jcvf test.tar.bz2 DIR ← Create, Verbose, File
		tar jxvf test.tar.bz2
		tar zcvf /tmp/user01.tar.gz user01
		tar zxvf user01.tar.gz -C /home
gzip	compress or expand files	gzip file1
gunzip		gunzip file1.gz
		gzip access_log.2011-[0][5-8]*.txt ←wild card
compress	package and compress (archive) files	compress file1
uncompress		uncompress file1.Z
bzip2	a block-sorting file compressor	bzip2 file1
bunzip2		bunzip2 file1.gz2
bz2cat		bz2cat file1.gz2
zip	package and compress (archive) files	zip file.zip file1 file2
unzip		zip -l file.zip ← -l = list for check
		unzip file.zip
		unzip -t file.zip ← -t = test
lha		lha a file.lzh file1 file2
		lha t file.lzh
		lha x file.lzh
gzcat		gzcat file.gz
		gzcat file.Z
zcat		zcat file.Z
zless	file perusal filter for crt viewing of compressed text	zless file.gz
zgrep	search possibly compressed files for a regular expression	zgrep PATTERN file.gz
zegrep	search possibly compressed files for a regular expression	zegrep "new" test.txt.gz
zdiff	compare compressed files	zdiff file1.gz file2.gz
Character		
lv	a Powerful Multilingual File Viewer / Grep	

qkc		
nkf	Network Kanji Filter	[to utf8] nkf -w -Lu --overwrite test.txt
		[to euc] nkf -e -Lu --overwrite test.txt
		[to sjis] nkf -s -Lw --overwrite test.txt
		find . -type f -name "*sh*" -print0 | xargs -0 nkf --overwrite -w -Lu
iconv	Convert encoding of given files from one encoding to another	iconv -f utf-8 -t sjis test.utf8 > test.sjis

User

useradd	create a new user or update default new user information	**Adminuser on RHEL**
		`useradd -G wheel USER1`
		Adminiuser on Ubuntu
		`useradd -m -s /bin/bash -G sudo USER2`
		useradd -u UID -g GROUP -G GROUP1,GROUP2 -s /bin/bash -d HOME_DIR LOGIN
		`useradd -D` ← check Default Parameter
adduser	add a user to the system	
whoami	print effective userid	whoami
w	Show who is logged on and what they are doing.	w
who	show who is logged on	who
		who --all
userdel	delete a user account and related files	userdel -r USER
		← (-r, --remove : Files in the user's home directory will be removed)
vipw	edit the password, group, shadow-password or shadow-group file	vipw ← edit /etc/passwd
		vipw -s ← edit /etc/shadow
passwd	change user password	echo "password01" | passwd --stdin user01
		passwd -S user1 ← check about the status of the password
		passwd -l user01 ← Lock the user
		passwd -u user01 ← Unlock
chpasswd	update passwords in batch mode	**echo user01:password | chpasswd**
		echo 'USER:PASS' > tmp.txt ; chpasswd < tmp.txt ; rm -f tmp.txt
mkpasswd		
chage		chage -l USER ← check

	change user password expiry information	chage -M 90 USER ← the password expires day set 90days
usermod	modify a user account	usermod -g GROUP USER
		usermod -g GROUP -G SUBGROUP USER
		usermod -G SUBGROUP USER
		usermod -aG SUBGROUP USER ← add Group
		usermod -G SUBGROUP1,SUBGROUP2 USER
		usermod -G "" USER
		usermod -l USER_NAME_NEW USERNAME_OLD ← change username
		usermod -d HOME_DIR_NEW USER_NAME ← change home directory
		usermod -u UID USER ← change UID
gpasswd		gpasswd -a USER sudo ← add USER to GROUP
		gpasswd -r USER sudo ← remove USER from GROUP
chsh	change login shell	chsh -l ← = cat /etc/shells
		chsh -s /bin/bash ← changing shell
		chsh -s /bin/bash user01
getent	get entries from Name Service Switch libraries	getent passwd ← you can check LDAP Users
		getent group
		getent shadow
pam_tally2	The login counter (tallying) module	pam_tally2 -u USER ← check
		pam_tally2 -u USER --reset ← reset

Group

groups	print the groups a user is in	groups
		groups USERNAME
groupadd	create a new group	groupadd -g GID GROUP
		groupadd -g 1100 dev
addgroup	add group to the system	addgroup [--gid ID] group
groupdel	delete a group	groupdel GROUP
groupmod	change USER's GID	groupmod -g GID GROUP
		groupmod -g 1501 testgroup1
		find / -gid OLDGID -print ← Check the OLD GID
		Reference
		usermod -aG SUBGROUP USER ← add Group
chgrp	change the Group of the file	chgrp -R GROUP FILE
vigr	edit the password, group, shadow-password or shadow-group file	

File Permissions

chmod	change file mode bits	chmod 777 TARGET

		chmod u+s PROGRAM ← add SSUID（Set User ID）
chown	change file owner and group	chown USER FILE
		chown USER:GROUP FILE
		chown -R USER:GROUP DIR ← -R : operate on files and directories recursively

Etc

finger	user information lookup program	finger
		finger user01
		finger -l user01
su	change user ID or become superuser	su - ← change root user
		sudo su - USER -s /bin/bash
		su - user1 -c "ssh user1@192.168.0.xx ls -lh /tmp" >> aaa.txt
sudo	execute a command as another user	sudo -u USER COMMAND
		sudo sh -c 'echo "test" >> /tmp/test.txt'
id	print real and effective user and group IDs	id USERNAME
last	show listing of last logged in users	last
		last -5 ← last 5 logged in users
		last USER
lastlog	reports the most recent login of all users or of a given user	lastlog
umask	set file mode creation mask	umask ← check
		umask 022 ← default 666-022=644(rw-r–r–)
		umask 002 ← 666-002=664(rw-rw-r–)
		umask 000 ← 666-000=666(rw-rw-rw-)

Network

ip	show / manipulate routing, devices, policy routing and tunnels	ip a ← print ip address
		ip addr ← print ip address
		ip r ← Show IP Routing
		ip route ← Show IP Routing
ss	another utility to investigate sockets	ss -lt ← List all Listening TCP Connections
		ss -ua ← List all UDP Connections
		ss -ltp ← Process Name with Listening TCP
		ss -anu
ifconfig	configure a network interface	ifconfig ← check ip
		ifconfig -a ← -a : display all interfaces
		ifconfig eth0 up
		ifconfig eth0 down
ifdown	take a network interface down	ifdown eth0
		ifdown eth0 && ifup eth0
ifup	bring a network interface up	ifup eth0

		ifdown eth0 && ifup eth0
route	show / manipulate the IP routing table	route ← show the IP routing table
		route -n ← show the IP routing table
		route add -net 192.168.10.0 netmask 255.255.255.0 gw 10.50.0.1
		route add -host 192.168.0.100 gw 192.168.1.100
		route del -net 192.168.10.0 netmask 255.255.255.0
ethtool	Display or change ethernet card settings	ethtool eth0
		ethtool -s eth0 speed 100 duplex full autoneg off
		ethtool -s eth0 autoneg on
mii-tool	view, manipulate media-independent interface status	mii-tool eth0
		mii-tool -vv eth0
arp	manipulate the system ARP cache	arp -n
		arp -an ← (-a : Shows the entries of the specified hosts.)
		arp -d 192.168.xx.xx ← delete arp
nmcli	line tool for controlling NetworkManager	nmcli d #d=device
		nmcli d show ← defail
		nmcli c #c=con=connection
		nmcli c down eno1
		nmcli c up eno1
nmtui		
tcpdump	dump traffic on a network	tcpdump -n port 80 -i any
		tcpdump -n not arp and not port 123 and not port 22
		tcpdump host 192.168.0.10 -n -w /tmp/20110615.pcap
		tcpdump -r /tmp/20110615.pcap ← -r : Read packets from file
Check Nectork Connection		
ping	send ICMP ECHO_REQUEST to network hosts	ping -c 5 -s 1500 192.168.0.1
		ping -i 0.5 192.168.0.1 # -i : interval
traceroute	print the route packets trace to network host	traceroute -n 192.168.0.10
		traceroute -T -p 80 192.168.0.10 ← (-T = TCP)
		traceroute -U -p 53 192.168.0.10 ← DNS (-U = UDP)
tracepath	traces path to a network host discovering MTU along this path	tracepath -n 192.168.0.10 ← UDP
		*tracepath don't use TCP.
mtr	a network diagnostic tool	mtr --tcp -P 80 xxxxxx

		mtr --udp -P 53 xxxxxx
		mtr -rwb xx.xx.xx.xx -c 10 -T -P 443
nmap	Network exploration tool and security / port scanner	nmap google.com ← Check TCP
		nmap -sT -sU -Pn x.x.x.x ← check TPC and UDP
		nmap -Pn -sT -p 22 xx.xx.xx.xx ← check Firewall
		nmap -Pn -sT -p 22 xx.xx.xx.xx/24 ← check Firewall
		nmap -sU -p 161 xxxxxx ← Check UDP
		nmap -Pn -p 22 HOST
		nmap -p 443 www.google.com
nc	Concatenate and redirect sockets	nc 192.168.0.10 80 22 ← check TCP
netcat		nc -u 192.168.0.100 53 ← check UDP
		nc -vz 192.168.0.10 1-1023 ← portscan
		nc -v x.x.x.x 22 < /dev/null > /dev/null 2>&1 || echo NG
nping		nping --tcp -p PORT HOST
		nping -c 1 --tcp -p PORT HOST
httping	measure the latency and throughput of a webserver	
http_ping		
hping , hping3		
fping		fping -g 192.168.0.0/24
DNS		
dig	DNS lookup utility	`dig -h` ←help
		`dig [@global-server] [domain] [q-type]`
		dig @8.8.8.8 google.com any
		dig @8.8.8.8 -x 74.125.235.101
		dig google.com mx
		dig +trace google.com
		dig +trace -x 173.252.120.6
nslookup	query Internet name servers interactively	nslookup -type=any google.com 8.8.8.8
		nslookup google.com 8.8.8.8
		nslookup -type=txt google.com
host	DNS lookup utility	`host` ← help
		`host [-t type] [server]`
		host gmail.com
		host x.x.x.x
		host -t any google.com 8.8.8.8
		host -t mx gmail.com 8.8.8.8
		host -t soa gmail.com
		-t = specifies the query type
whois	client for the whois service	whois google.com
nscd	name service cache daemon	nscd --help
		nscd -i hosts ← chache clear
		nscd -g ← Print current configuration statistics

Connection		
telnet	user interface to the TELNET protocol	telnet IP PORT
ssh popular	OpenSSH SSH client (remote login program)	ssh USER@IP
		ssh xx.xx.xx.xx "hostname; netstat -rn |grep 10.110.0"
		ssh xx.xx.xx.xx sudo /sbin/reboot
scp	secure copy (remote file copy program)	scp test.tar.gz user1@192.168.0.10:/tmp
	the link file copied as the real file.	scp -rp /home/user1 user1@192.168.0.10:/home
		scp -rp /tmp/test1/ user1@192.168.0.10:/tmp/test2/
rsync popular	a fast, versatile, remote (and local) file-copying tool	
	the link file copied as the link file.	
	rsync -avz --delete /home/user1**/** /tmp/user1.bk/	
	← rsync "/" is very important.	
	rsync -e ssh -avz --delete /home/user1/ user2@192.168.0.2:/home/backup/server1/home/user1/	
	rsync -e ssh -avz –-bwlimit=1250 FILE user@192.168.0.2:/DIR/ # 1Mbps = 125KBps	
ssh-keygen	authentication key generation, management and conversion	ssh-keygen -t rsa ← generate rsa key pair
		ssh-keygen -t rsa -b 4096 -C "" -N "" -f id_rsa
		ssh-keygen -R HOST
		← Removes all keys belonging to hostname from a known_hosts file.
ssh-copy-id	use locally available keys to authorise logins on a remote machine	
	ssh-copy-id USER@x.x.x.x	
	ssh-copy-id -i xxxxx USER@x.x.x.x	
	Other method	

		cat ~/.ssh/id_rsa.pub | ssh USER@x.x.x.x "mkdir -p ~/.ssh; cat >> ~/.ssh/authorized_keys"
HTTP		
[curl popular](#)	transfer a URL	curl -O http://example.com/images/test.jpg
		curl -I http://www.example.com/ ← Only Header
		curl -i http://www.example.com/ ← Header and Body
		curl --proxy http://proxy.example.com:8080 http://example.com/
[wget](#)	The non-interactive network downloader.	wget http://google.com/
		wget -e http_proxy=xx.xx.xx.xx:8080 http://example.com/
		wget -e https_proxy=xx.xx.xx.xx:8080 https://example.com/
		wget -S --spider http://example.com/ ← Only Header
FTP		
ftp	ARPANET file transfer program	
lftp	Sophisticated file transfer program	
SNMP		
[snmpwalk](#)	retrieve a subtree of management values using SNMP GETNEXT requests	snmpwalk -v 2c -c public localhost sysname
		snmpwalk -v 2c -c public localhost .1.3.6.1.2.1
[snmpget](#)	communicates with a network entity using SNMP GET requests	snmpget -v 2c 192.168.0.10 -c public .1.3.6.1.4.1.2021.11.50.0
[snmptranslate](#)	translate MIB OID names between numeric and textual forms	snmptranslate -Tp | less
snmpnetstat	display networking status and configuration information from a network entity via SNMP	snmpnetstat -v 2c -c public -Can localhost
		snmpnetstat -v 2c -c public -Ci localhost
		snmpnetstat -v 2c -c public -Cs localhost
Shell		

date	print or set the system date and time	date --date '10day ago' +"%Y%m%d" → 20061030
		date +"%Y%m%d" → 20061030
		date +"%H:%M" → 12:47
		cp -p FILE FILE.`date +%Y%m%d`
		cp -p FILE FILE.`date -d '1day ago' +%Y%m%d`
tr	translate or delete characters	
cut	remove sections from each line of files	echo abcdef |cut -c 3-
		echo abcdef |cut -c 2-4
sort	sort lines of text files	sort -t: +1 -n sample.txt
uniq	report or omit repeated lines	cat access_log.1 | awk {'print $4'} |awk -F: {'print $1$2$3'} | sort |uniq -c
logger	a shell command interface to the syslog(3) system log module	logger "test test"
tee	read from standard input and write to standard output and files	xxxx.sh | tee xxxx.log
		xxxx.sh | tee -a xxxx.log
		xxx.sh 2>&1 | tee xxxx.log ← Save standard output and standard error output to file
basename	strip directory and suffix from filenames	SHELLNAME=`/usr/bin/basename $0`
		SHELLNAME=`/usr/bin/basename $0 .sh`
dirname	strip last component from file name	DIR=`dirname ${0}`
paste	merge lines of files	paste -d, test1.txt test2.txt
awk		echo "1 2 3 4 5" | awk '{ print $1 "," $3 }'
		echo "1 2 : 3 4 : 5" | awk -F: '{ print $2 }'
sed		sed -e 's/xxx/XXX/g' input.txt > output.txt
		sed -i "s/IPADDR=192.168.0.10/IPADDR=192.168.0.11/g" ifcfg-eth0
mail	send and receive Internet mail	
mailx	echo test | mail -s "test" -S "smtp=smtp://xx.xx.xx.xx:25" test@example.com	
	cat test.txt | mail -s "test" -S "smtp=smtp://xx.xx.xx.xx:25" test@example.com	
	echo "`hostname` `date`" | mail -s "attach test" -a tmp.txt -S smtp=smtp://x.x.xx:25 -r from@example.com to@test.com	

while		while : ; do uptime ; sleep 1 ; done
		while : ; do uptime >> /tmp/tmp.txt ; sleep 1 ; done
		while : ; do ps aux |grep httpd |wc -l ; sleep 1 ; done
for		for i in 127.0.0.1 192.168.10.1; do ping -c 2 $i; done
sleep		sleep 1
usleep	sleep some number of microseconds	usleep 1000000 ← 1,000,000 = 1sec
		usleep 100000 ← 100,000 = 0.1sec
		usleep 10000 ← 10,000 = 0.01sec

Hardware

dmesg	print or control the kernel ring buffer	dmesg
lsusb	List USB devices	lsusb
lspci	list all PCI devices	lspci
nproc	print the number of processing units available	nproc
		grep -c processor /proc/cpuinfo
		getconf _NPROCESSORS_ONLN
inxi	Display info about all hardware	inxi -Fxz
hwinfo	Display info about all hardware	hwinfo
		hwinfo --short
lshw	Display info about all hardware	lshw -short
	"lshw" stands for "List Hardware".	lshw -C cpu <- Display all CPU info
		lshw -short -C memory
		lshw -short -C disk
		lshw -C network
lscpu	Display all CPU info	lscpu
dmidecode		dmidecode -t memory | grep -i size
		dmidecode -t memory | grep -i max <- Show maximum memory for the hardware
		dmidecode -t bios <- Display UEFI/BIOS info

Module

lsmod	show the status of modules in the Linux Kernel	lsmod
modinfo	show information about a Linux Kernel module	modinfo MODULENAME
		modinfo bnx2
insmod	insert a module into the Linux Kernel	

rmmod	remove a module from the Linux Kernel	
modprobe	add and remove modules from the Linux Kernel	

HDD

du	estimate file space usage	du -sh *
		du -sh dir/
		du -h --max-depth=1
fuser	identify processes using files or sockets	fuser -mv /mnt/test ← check
		fuser -mvk /mnt/test ←(-k : Kill processes)
chroot	run command or interactive shell with special root directory	
hdparm	get/set hard disk parameters	
dumpe2fs	dump ext2/ext3/ext4 filesystem information	
badblocks	search a device for bad blocks	

Partition

df	report file system disk space usage	df -h ← (-h : print sizes in human readable format)
		df -BG ← Bigabyte Unite
		df -BM ← Megabyte Unite
sfdisk	partition table manipulator for Linux	sfdisk -l ←(-l : List the partitions of a device.)
fdisk	manipulate disk partition table	fdisk -l ← (-l : List the partition tables)
		fdisk -l /dev/sdb
		fdisk -l -o +UUID
gdisk	Interactive GUID partition table (GPT) manipulator	
parted	a partition manipulation program	parted -l ← check partitions
		parted /dev/mapper/mpath0
lsblk	list block devices	lsblk
e2label	Change the label on an ext2/ext3/ext4 filesystem	

Swap

mkswap	set up a Linux swap area	
swapon	enable devices and files for paging and swapping	swapon -s ← Check
		swapon -a
		swapon /dev/xvda3
swapoff	disable devices and files for paging and swapping	swapoff -a

File Systems

mkfs	build a Linux filesystem	mkfs -t xfs /dev/sdb1

	#you must umount the device before mkfs.	mkfs -t ext3 /dev/sdb1
		mkfs -t ext4 /dev/sdb1
mkfs.xfs mkfs.ext4	#you must umount the device before mkfs.	mkfs.ext4 /dev/sdb1
mkfs.ext3		mkfs.ext3 /dev/sdb1
mkfs2fs	create an ext2/ext3/ext4 filesyste	mke2fs /dev/sdb1 ← ext2
	#you must umount the device before mkfs.	mke2fs -j /dev/sdb1 ← ext3
xfs_info		xfs_info /dev/sda1
tune2fs	adjust tunable filesystem parameters on ext2/ext3/ext4 filesystems	tune2fs -l /dev/mapper/mpath0
		← -l : List the contents of the filesystem superblock.
		tune2fs -l /dev/mapper/mpath0 |egrep "count|interval"
		tune2fs -i 0 -c 0 /dev/mapper/mpath0
		← -i : interval, -c : mount count
fsck	check and repair a Linux filesystem	fsck -p /dev/sda1
	you must umount the device before fsck.	← -p : Automatically repair ("preen") the file system.
	for example single usermode and umount.	
	'shutdown -r -F now' is force fsck after reboot.	
fsck.ext4	check and repair a Linux filesystem	
e2fsck	check a Linux ext2/ext3/ext4 file system	
resize2fs	ext2/ext3/ext4 file system resizer	resize2fs /dev/testvg/lvol0
Data		
dd	convert and copy a file	dd if=/dev/zero of=test_10M bs=1M count=10
		dd if=/dev/zero of=test_100M bs=1M count=100
		dd if=/dev/zero of=test_1G bs=1M count=1000
		dd if=/dev/zero of=temp.bin bs=1 count=0 seek=1G ← sparse file
sync	flush file system buffers	
shred	overwrite a file to hide its contents, and optionally delete it	
mount		
mount	mount a filesystem	mount
		mount	column -t
		mount /mnt/test /dev/sda1
		mount -o remount /dev/sda1
		mount -t cifs //xx.xx.xx.xx/test /mnt/test -o username=guest,password=
umount	unmount file systems	umount /mnt/test

		umount -f /mnt/test
		(-f : Force unmount(in case of an unreachable NFS system))
		umount -l /mnt/test
		(-l : Lazy unmount.Detach the filesystem from the filesystem hierarchy now)
References : LVM - How to Use LVM in Linux		
## LVM		
lvm	LVM2 tools	
## PV (Physical Volume)		
pvs	report information about physical volumes	
pvdisplay	display attributes of a physical volume	pvdisplay
		pvdisplay -C
pvcreate	initialize a disk or partition for use by LVM	pvcreate /dev/mapper/mpath0p1
		pvcreate /dev/mapper/mpath0p1 /dev/mapper/mpath1p1
pvremove	remove a physical volume	pvremove /dev/mapper/mpath0p1
pvscan	scan all disks for physical volumes	
## VG (Volume Group)		
vgs	report information about volume groups	vgs -o +vg_tags ← check tag
vgdisplay	display attributes of volume groups	vgdisplay
		vgdisplay -C
vgcreate	create a volume group	vgcreate vgdata1 /dev/hdb1 /dev/hdc1
vgremove	remove a volume group	vgremove vg01
vgscan	scan all disks for volume groups and rebuild caches	
vgchange	change attributes of a volume group	vgchange -a y ← activate
		vgchange -a n ← deactivate
		vgchange -a y vg01
		vgchange -a n vg01
		Check : lvdisplay VGDATA |grep Status

		vgchange --addtag $(uname -n) VG_TEST
		vgchange --deltag $(uname -n) VG_TEST
vgextend	add physical volumes to a volume group	vgextend vg01 /dev/hdd1
vgrename	rename a volume group	vgrename oldvg newvg

LV (Logical Volume)

lvs	report information about logical volumes	
lvdisplay	display attributes of a logical volume	lvdisplay
		lvdisplay -C
		lvdisplay /dev/mapper/VGDATA-lv00
lvcreate	create a logical volume in an existing volume group	lvcreate -l PENUMBER vgdata
		lvcreate -L 150G vgdata
lvremove	remove a logical volume	lvremove /dev/testvg/lvol0
lvscan	scan (all disks) for logical volumes	
lvresize	resize a logical volume	lvresize -L +5G /dev/vg0/home
lvextend	extend the size of a logical volume	lvextend -L +5G /dev/vg0/home
		lvextend -l +100%FREE /dev/mapper/Array00-lv00
lvreduce	reduce the size of a logical volume	
lvrename	rename a logical volume	lvrename /dev/vgdata/lvol0 /dev/vgdata/lvol1

Performance

top	display Linux processes	top -b -n 4 -d 5 ← interval 5sec , 4 times
sar	Collect, report, or save system activity information.	sar -f /var/log/sa/sa16
		sar (cpu,io)
		sar -r (memory)
		sar -q (Loadaverage)
vmstat LIKE	Report virtual memory statistics	vmstat 1 ← interval 1sec (cpu, io, memory, swap)
		vmstat 1 5 ← interval 1sec, 5 times (cpu, io, memory, swap)
iostat	Report Central Processing Unit (CPU) statistics and input/output statistics for devices and partitions.	iostat -xtk 1 (cpu, io) ← interval 1sec
mpstat	Report processors related statistics.	mpstat -P ALL
uptime	Tell how long the system has been running.	while : ; do uptime ; sleep 1 ; done
		while : ; do uptime » /tmp/tmp.txt ; sleep 1 ; done
w	Show who is logged on and what they are doing.	
free	Display amount of free and used memory in the system	free -m ← show output in MB

netstat	Print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships	**netstat -anp** (-a : Show both listening and non-listening sockets.)
		netstat -rn (-r : Display the kernel routing tables.)
iotop	simple top-like I/O monitor	iotop -b -n 4 -d 15 ← interval 15sec , 4 times
dstat LIKE	versatile tool for generating system resource statistics	dstat -taf
Load Test		
fio		
Software		
make	GNU make utility to maintain groups of programs	
patch	apply a diff file to an original	patch -p1 -N < ../xxx.patch
ldd	print shared library dependencies	ldd BINARY
yum popular	an interactive, rpm based, package manager	yum repolist ← check enabled repository
		yum search STRINGS
		yum info PACKAGE ← check rpm version etc
		yum install PACKAGE
		yum --disablerepo=* --enablerepo=test-repo repolist
rpm	RPM Package Manager	rpm -ivh PACKAGE.rpm ← install
		rpm -e PACAGE.rpm ← uninstall
		rpm -qa --last
apt	apt provides a high-level commandline interface for the package management system.	apt list --installed ← check installed package
dpkg		dpkg -l ← check installed package
alien		alien -d package-x.x.x.rpm
		alien -r package-x.x.x.deb
update-alternatives		update-alternatives --config mta
rhn_register		rhn_register --nox --proxy=http://192.168.0.10:9999