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| **Basic Commands** | | |
| cd | change directory | cd <directorya>  cd *(change to home directory)*  cd ~ *(change to home directory)*  cd - *(change to last directory)* |
| cp | copy file(s) or directories |  |
| date | display current system date and time |  |
| echo | display text | echo <text>  echo $SHELL *(display current shell name)* |
| exit | end session |  |
| find | find files / directories matching the provided criteria | find recursively from the provided directory all files/directories where ...  last\_modification\_time is older than 5 days and list them in details:  find . -mtime +5 -exec ls -lt {} \;  name contains pattern 'log':  find . -name "\*log\*"  name begins with 'str' and type is directory and delete those recursively:  find . -name "str\*" -type d -exec rm -Rf {} \;  find all files (type = file) in given directory which are older than 30 days and move them to directory logdir  find . -mtime +30 -type f -exec mv {} ./logdir \;  find files bigger than 1MB  find . -size +1000k -exec ls -la {} \;  Number of files  find . -type f|wc –l  Number of directories  find . -type d|wc –l  Files without archive bit (see Samba)  find . ! -perm /u+x  Files with archive bit (see Samba)  find . -perm /u+x |
| ln | create link to a file or directory | ln -s <file> <linkname> *(create softlink to <file>)* |
| ls | list directory entries | ls -a *(list also hidden files)*  ls -l *(long (detailed) list of files)*  ls -alFh <dir> *(list symbolic links)*  ls -ltr *(sort by timestamps reversely)*  ls -Fohal --color=always |
| mkdir | make directory |  |
| mount | mount a filesystem | mount /mnt/floppy |
| mv | move/rename of file/directory | mv <filea> <fileb> |
| pwd | print working directory |  |
| rm | remove file / directory | m <filea>  rm -Rf <directorya> *(remove recursively the directory with all its files and subdirectories)* |
| rmdir | remove empty directory, only works for empty directories, otherwise use rm -Rf directory | rmdir <emptydirectory> |
| shutdown | shutdown system | shutdown –h now *(shutdown and halt instantly)* |
| sudo | "substitute user do" - execute command as root user | sudo su *(become root)*  sudo su - *(become root and execute root's start scripts)*  sudo su user *(become user)*  sudo su - user *(become user and execute user's start scripts)* |
| touch | create an empty file in the current directory | touch <filename> *(change file timestamps - defaults to now)* |

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| **Help** | | | | |
| man | manual page of a command | | man ls *(show man page section 1 of ls)*  man cron 8 *(show man page section 8 of command cron)* | |
| info | show documentation in info format | | info ls | |
|  | General help | | <command> --help | |
| **Text processing** | | | | |
| grep | | find a file content and print lines matching a pattern | | find a string in all files of the current directory  grep examplestring \*  find a string and list only the filename  grep -l examplestring \*  find a string and count only the hits per file  grep -c examplestring \*  find all lines which do NOT match the given pattern  grep -v examplestring \*  combined with a find command  find . -name "\*.log" -exec grep -l string {} \;  find all occurrences of <string> in all given files showing 3 lines before and 50 lines after each occurrence  grep -A 50 -B 3 <string> `ls -rt1 STATUS\*.xml`  grep continuously  tail -f <file>|grep --line-buffered <string>  Number of Files that contain “string”  grep string \*.xml -c|grep -v :0|wc –l  Find files containing „str“ not older than 2 days  ls -t `find . -ctime -2 -exec grep -l str {} \;` |
| head | | print beginning of input | | print first 5 lines  head -n 5 |
| less | | show file and move backwards or forwards | | less <filename> |
| tail | | print end of input | | tail –n 5 *(print last 5 lines)*  ls –ltr | tail –n 1 *(show newest file)* |
| wc | | wordcount | | wc –l *(count nubmer of lines)*  ls | wc –l *(count number of files in current directory)* |
| xargs | | build and execute command lines from standard input | | find . -name '\*' -print0 | xargs -0 <command> |
| **Disk space** | | | | |
| df | | report filesystem disk space usage | | df -h *(print report in human readable form)*  df -i *(print inodes)* |
| du | | estimate file space usage | | du -h . *(print report in human readable form)*  du -sh --apparent-size *(print actual size)* |
| **Processes** | | | | |
| kill | | shutdown a process | | kill -15 <number> *(shutdown gracefully)*  kill -9 <number> *(shutdown* |
| xkill | |  | |  |
| ps | | list processes | | ps aux *(list processes of all users, with or without tty and print owners)* |
| pstree | | display a tree of processes | | pstree –p | less *(list process with PIDs, scrollable)* |
| top | | display Linux processes | |  |
| htop | |  | |  |
| lsof | | list open files | | lsof –i *(list all internet network files)*  lsof | grep tom | wc –l *(count all open files of tom)*  lsof -u agn | wc –l  lsof -u root | wc -l  lsof | wc -l |
| ulimit | | report the resources available to the shell and to processes started by it  e.g. stack size, number of open files, max user processes | | list all system resource limitations  ulimit -a  more examples  ulimit -Hn  ulimit -Sn |
| **Networking** | | | | |
| dig | | DNS lookup utility | |  |
| host | | find domain name for ip | |  |
| ifconfig | | show or change interface configuration | |  |
| netstat | | Print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships | | netstat -vatn |
| nslookup | | query Internet name servers interactively | | nslookup <server> |
| ping | | test reachability of a machine | | ping 192.168.1.1 |
| traceroute | | print the route packets take to network host | |  |
| **Scheduling** | | | | |
| crontab | | Show / edit scheduler table of current user | | crontab -l *(list crontab)*  crontab -e *(edit crontab)* |
| **System infos** | | | | |
| dmesg | | print or control the kernel ring buffer | | dmesg | less |
| file | | determine file type | | file <filename>  file -bi <filename> *(print brief mime type)* |
| uname | | print system information | | uname -a *(show full system information,*  *"Linux applicationsrv1 2.6.32-5-amd64 #1 SMP Mon Feb 25 00:26:11 UTC 2013 x86\_64 GNU/Linux")* |
| whereis | | searches a command in the path | | whereis <command> |
| which | | which command executable is used | | which <command> |
| who | | show users on the system | |  |
| whoami | | show your own user | |  |

# List options

-1: single column

-l: long version

-o: no group

-a: all

-A: almost all (except . ..)

-h: human-readable sizes (1K, 223MB)

-d: just names of directories rather than contents

-R: recursive

-F: classify (append / for dirs, \* for exe, @ for links,...)

--color=always

# Post a file

wget --post-file="file.xml" --header="Content-type: text/xml" <http://host>

# Useradd

## Variante 1

useradd markus

passwd markus

mkdir /home/markus

chown markus:markus /home/markus

nano /etc/passwd # Bash als Shell festlegen

nano /etc/sudoers # sudo-Rechte anlegen

markus ALL=NOPASSWD: ALL

## Variante 2

1. Benutzer hinzufügen und

useradd -d /home/markus -g psacln -s /bin/bash markus

1. Passwort ändern

passwd markus

1. Bash: siehe Kapitel Bash
2. sudo

In /etc/sudoers einfügen:

markus ALL=NOPASSWD: ALL

## Chmod

**Logisch**

rwx rwx rwx

owner[u]/group[g]/other[o]

all[a]

Syntax

chmod [ugoa][-+=][rws] <file>

**Oktal**

1 = execute

2 = write

4 = read

**Beispiele**

chmod 644 <file>

chmod g+rw <file>

chmod u+x,g-w,o= <file>

# Installer/Paket-Manager

## Debian/Ubuntu

apt-get update

apt-get upgrade

apt-get install <package>

package-cleanup # Package yum-utils nötig

## CentOS/RedHat

yum install <package>

rpm –qi <package> # Informationen zu einem Package

## Packages

*siehe* [*https://github.com/psicho2000/docker-debian*](https://github.com/psicho2000/docker-debian) *(Dockerfile)*

sudo

nano

tcpflow

xmlstarlet

yum-utils (Repair Tools)

xkill

htop

# Samba

**smb.conf: /etc/samba/**

Samba mappt die Windows-Eigenschaften auf die Executable-Bits

map archive = yes # x für den Eigentümer (u), standarmäßig yes

map system = yes # x für die Gruppe (g), standarmäßig no

map hidden = yes # x für alle (a), standarmäßig no

# Bash

## .bash\_profile

export VISUAL='nano'

export EDITOR='nano'

## .bash\_rc

alias <befehl>='mapping'

# Autostart CentOS

chkconfig --list # Anzeige der Autostart-Konfiguration

chkconfig --add <dienst> # Dienst in die Autostart-Liste einfügen

chkconfig <dienst> on # Dienst für den Autostart konfigurieren

# Verzeichnisstruktur

/bin Programme zur Systemverwaltung, alle Nutzer

/boot LiLo und Linux-Kernel

/dev Geräte (Devices)

hda: Primary Master

hdb: Primary Slave

hdc: Secondary Master

hdd: Secondary Slave

hda1...hda4: Primärpartitionen 1-4

hda5,hda6: Logische Partitionen 1+2

fd0: floppy

cdrom: cdrom

null: Mülleimer

tty\*: Terminalkonsolen

ttyS\*: Serielle Schnittstellen

Zugriffstypen:

b: Blockorientiert (gepuffert), z.B. Festplatten

c: Zeichenortientiert (ungepuffert), z.B. Drucker

/etc globale Konfigurationsdateien

/home Heimatverzeichnisse aller Nutzer außer root

/lib einige gemeinsam genutzter Bibliotheken (libraries) bzw. Links darauf

/lost+found bei unsachgemäßer Beendigung Dateien, die nicht zugeordnet werden konnten (für jede Partition ein solches Verzeichnis)

/mnt mount-Point für zusätzl. Dateisystem (normalerweise leer)

/opt Programme, die nicht zur üblichen Linux-Installation gehören (3rd Party), z.B. KDE

/proc Laufzeitsystem von Linux, enthält alle Prozesse

/root Home-Verzeichnis von root

/sbin Kommandos zur Systemverwaltung, nur für root

/tmp temporäre Dateien, alle Nutzer

/usr Anwendungsprogramme für alle Nutzer (z.B. X-Windows, LaTeX)

| Ordnerstruktur ähnlich wie /

| /bin Nutzerprogramme

| /doc

| | /howto

| L /info

| /lib Bibliotheken von Nutzerprogrammen

| /local

| | /bin

| | /lib

| L /man

| /man Manual Pages

| /sbin systemnahe Nutzerprogramme (Netzwerktools)

| /var

| | /run PIDs laufender Prozesse

| | /lock gesperrte Resourcen

| L /spool Zwischenlager auszudruckender Dateien und ausgehender Mails

L /X11R6 X-Windows-System

| /bin

| /lib

| /include

L /man

/var variable Dateien (Prot. von Systemmeldungen, Druckaufträge)