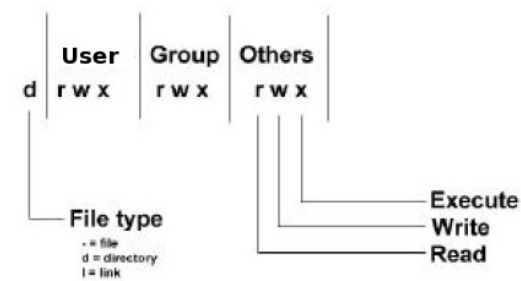


LINUX Cheat Sheet

Getting Started

- **ssh <login@><Servername | IP-Address>**
- **cd /Name/of/Directory:** Directory to access
 - ~: Go to home directory
 - : Go to previous directory
- **ls <options>**
 - l: long listing format
 - a: List all files
 - t: Sort by modification time
 - r: Sort in reverse order
- **man <command>**: View manpage
- **mkdir <option> NewDirectory**
 - p: Create new directory including parent directory
- **rmdir OldDirectory:** Remove directory
- **df:** report file system disk space usage
 - h: Make printout human-readable

- **chmod:** Change file permissions
e.g. revoke execute permissions: **chmod go-x file**



```
File Edit View Search Terminal Help
< 10:06:37 | Tue Feb 23 | [-4] >
>:df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda1        9.7G  765M  8.4G   9% /
tmpfs            7.8G  16K   7.8G   1% /dev/shm
/dev/mapper/scratchvg-scratchlv
224G    57G  156G  27% /scratch
/dev/sda5        2.0G   36M   1.8G   2% /tmp
/dev/sda2        20G   4.0G   15G  22% /usr
/dev/sda6        2.0G  951M  918M  51% /var
AFS              2.0T     0   2.0T   0% /afs
vf-g02.zih.tu-dresden.de:/vol/grp02/pkthme
2.0T  432G  1.6T  22% /amnt/remote/pkthafc.home
pkts08:/raid1    4.3T  4.1T  296G  94% /amnt/remote/pkts08.raid1
pkts08:/raid2    11T  8.9T  1.2T  89% /amnt/remote/pkts08.raid2
pkts07:/raid3/global_cluster/BaBar/RH_run/SL6_64_CN
1.1T  313G  691G  32% /amnt/remote/pkthafc.RH_run
cvmfs2           69G   53G   16G  78% /cvmfs/atlas.cern.ch
bluearc:/phy     45T   40T   5.3T  89% /amnt/remote/ZIH.fast
< 10:06:42 | Tue Feb 23 | [-5] >
>:□
```

LINUX Cheat Sheet

Moving, Copying, Deleting & Viewing Files

- **mv <options> <file> <filename | directory >**
- **cp <options> <file> <filename | directory | server>**
 - r: Copy recursively
 - a: archive mode (preserve time, permissions etc.)
- **rm <filename | directory>**: Remove file
- **less <file>**: Display file
- **head <file>**: Display first 10 lines file
- **tail <file>**: Display last 10 lines of file
- **cat <file>**: Paste file to stdout
- **rsync -av <file|directory> login@server:/directory**: Secure copying of files | directory
 - P | --progress: Show progress bar
 - u: Copy only files with newer time stamp
 - bwlimit=25000: Reduces bandwidth to 25000 KBytes per second

Finding Files & Text inside Files

- **find <StartDirectory> -name "filename"**
- **locate <file>**: find file using system database
- **which <program>**: find program using directories defined in \$PATH
- **grep 'pattern' file | directory/file**: Search for pattern in file
 - i: Search is case in-sensitive
 - R: Search recursively this and all subdirectories

LINUX Cheat Sheet

Running and Monitoring Programs

- **screen**: Open independent session which keeps running after logout
 - r <ID>: Reattach session
 - ls: List running screen session
 - D -r: Attach session. If necessary detach first and log out
 - x: Attach to a not detached session
 - S: Give the socket of the screen session a useful name
- **ps <options>**: Report snapshot of current processes
 - aux: See every process on the system
- **top/htop**: Display linux tasks on system
- **./MyProgram &**: Start MyProgram as background process
- **w**: Show who is logged on and what they are doing
- **free**: Shows how much memory is available on node
- **uptime**: Shows number of users and average load

```
File Edit View Search Terminal Help
top - 09:51:22 up 3 days, 1:59, 6 users, load average: 0.09, 0.08, 0.03
Tasks: 302 total, 3 running, 299 sleeping, 0 stopped, 0 zombie
Cpu(s): 6.0%us, 2.3%sy, 0.0%ni, 91.6%id, 0.0%wa, 0.0%hi, 0.0%si, 0.0%st
Mem: 11896668k total, 5418256k used, 6478412k free, 230724k buffers
Swap: 12285948k total, 3984372k used, 8301576k free, 1421440k cached

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
4205 mader 20 0 2986m 994m 21m S 14.9 8.6 680:50.06 opera
6233 qemu 20 0 6486m 863m 616 S 4.3 7.4 132:52.71 qemu-kvm
6195 mader 20 0 815m 20m 9.9m S 3.6 0.2 48:51.67 python
3054 root 20 0 1004m 5584 2192 S 3.3 0.0 45:48.43 libvirtd
3460 root 20 0 177m 21m 11m R 2.0 0.2 52:03.13 Xorg
3737 mader 20 0 30124 1036 768 S 1.7 0.0 27:29.98 xosview
4227 mader 20 0 359m 10m 5804 S 1.3 0.1 0:11.46 gnome-terminal
13195 mader 20 0 153m 85m 24m S 1.3 0.7 3:57.90 acroread
3690 mader 20 0 117m 1660 1108 S 1.0 0.0 8:01.86 at-spi-registry
3869 mader 20 0 303m 2276 1616 S 0.7 0.0 9:57.58 multiloop-apple
3872 mader 20 0 293m 3996 2772 S 0.7 0.0 3:15.29 cpufreq-applet
30395 mader 20 0 15168 1396 924 R 0.3 0.0 0:00.09 top
1 root 20 0 19356 756 516 S 0.0 0.0 0:02.28 init
2 root 20 0 0 0 0 S 0.0 0.0 0:00.18 kthreadd
3 root RT 0 0 0 0 S 0.0 0.0 0:03.06 migration/0
4 root 20 0 0 0 0 S 0.0 0.0 0:01.39 ksoftirqd/0
5 root RT 0 0 0 0 S 0.0 0.0 0:00.00 stopper/0
```

LINUX Cheat Sheet

Controls:

- **ctrl-c**: Abort running program
- **ctrl-z**: Suspend running program
 - AtThePrompt> bg**: Send process to background
 - AtThePrompt> fg %n**: Run job number n in foreground
- jobs**: Show all running jobs in current session
- **ctrl-r**: Browse history for previous commands (see also history)
- **ctrl-a**: Move cursor to beginning of line
- **ctrl-e**: Move cursor to end of line
- **ctrl-d**: End session
- **nohup**: Release jobs from terminal
- **nice -n<nicelevel>**: Renice your jobs for fair CPU usage

LINUX Cheat Sheet

Assorted Commands

- **alias <shortcut="command">**
no argument: List all aliases defined in the system
shortcut="command": Define shortcut for command, e.g. alias ll="ls -al"
- **yppasswd**: Change password
- **exit/logout**: Leave session

Archiving Files

- **tar zcf file.tar.gz MyFiles**
z: Compress archive using gzip **t**: List files in archive
c: Create archive **x**: Extract files from archive
f: Next input is name of the archive file

LINUX Cheat Sheet

Final Example

Prompt:> ssh YourLogin@pktlogin.phy.tu-dresden.de

Prompt:> cp ~tutorial/Public/spread.exe .

Prompt:> cat spread.exe

```
#!/bin/bash
#
# Bash-script that scans pktf32 through pktf40 submits
# <command> to the machine
#
if [ $# == 0 ]; then
    echo "command missing"
    echo "Usage: sh ./spread.exe <command>"
else
    for i in {32..40}; do
        echo -n "sending $1 to pktf${i}: "
        ssh -t pktf${i} "${1}" 2>/dev/null
    done
fi
```

Prompt:> sh ./spread.exe uptime

```
sending uptime to pktf32: 15:59:54 up 218 days, 4:11, 10 users, load average: 1.01, 1.00, 1.00
sending uptime to pktf33: 15:59:54 up 128 days, 4:49, 6 users, load average: 0.00, 0.00, 0.00
sending uptime to pktf34: 15:59:55 up 218 days, 4:14, 7 users, load average: 0.00, 0.00, 0.00
sending uptime to pktf35: 15:59:55 up 218 days, 4:13, 9 users, load average: 1.15, 1.03, 1.01
sending uptime to pktf36: 15:59:55 up 218 days, 4:13, 16 users, load average: 0.00, 0.06, 0.10
sending uptime to pktf37: 15:59:55 up 218 days, 4:13, 36 users, load average: 0.00, 0.00, 0.00
sending uptime to pktf38: 15:59:55 up 218 days, 4:13, 3 users, load average: 0.28, 0.31, 0.45
sending uptime to pktf39: 15:59:55 up 218 days, 4:13, 9 users, load average: 1.50, 1.14, 1.06
sending uptime to pktf40: 15:59:55 up 218 days, 4:11, 24 users, load average: 0.05, 0.07, 0.03
```