

Linux

Grundlagenhandbuc

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Common Commands

Help Commands

Command	Description
compgen -c	Show all commands
compgen -a	Show all alias commands
compgen -A function	Show available functions
man <command>	Show manual page of a command (more info than --help)
<command> --help	Show help page of a command (less info than man command)
<command> --version	Show version of a command

File & Folder Commands

Command	Description
ls -lah	List files/folders in current directory (+infos)
mkdir newdir	Create a new folder
cd somefolder	Change/switch to another directory
cd /mnt/	change/switch to another drive
cp file.txt file-copy.txt	Copy a file
mv file.txt file-renamed.txt	Rename a file
mv file.txt /tmp	Move file to another folder
rm file.txt	Remove a file
rm -rf folder	Remove entire folder (recursive)
ln -s original target	Create a symlink

pwd	Show path of current folder
chown <arguments> <user>:<group> file.txt	Change Owner and Group of file (use -R for rekursive)

Search & String Commands

Command	Description
find . -name "file.txt"	Search for a file (recursive)
find . -name "*.txt"	Search for all txt files
grep -rin "search string"	Search for a string in current folder (recursive)
grep -rin "search string" cut -c 1-100	Search for a string in current folder + limit output of string
sed -Ei 's/someString/newString/g' file.txt	Replace "someString" with "newString" in a file
head file.txt	Show first 10 lines of file
tail file.txt	Show last 10 lines of file
cat file.txt	Show full content of file
cat file.txt grep "search string"	Pipe output of "cat" command to grep + filter string

Terminal Search, Shortcuts & Autocompletion

Command	Description
Ctrl + a	Jump to beginning of line
Ctrl + e	Jump to end of line
Ctrl + Arrow Left	Jump word backward
Ctrl + Arrow Right	Jump word forward
Ctrl + w	Remove word backward
Alt + w	Remove word forward
Ctrl + p	Go through command line history backward
Ctrl + n	Go through command line history forward

Ctrl + r	Reverse Search in command history: <ul style="list-style-type: none"> - Type in something to search - Type Enter to execute the searched command - Type "Ctrl + r" to search further in reverse - Type "Ctrl + s" to search further in inverse - Tip: In only a few cases it makes sense to use the inverse search (Ctrl + s) from the beginning, but usually you want to search in reverse from the latest history commands
Ctrl + s	Same as "Ctrl + r" but inverse (starts from the beginning of the history)
Ctrl + f	Autocomplete a suggestion (<u>Fish Shell</u> only)

OS Helper Commands

Command	Description
du -csh .	Show size of current folder
df -h	Show partitions / drives
lsb_release -a	Show OS Version / Informations

Remote / Host Commands

Command	Description
wget https://www.somewhere495848.com/test.txt	Download a file
curl -LI https://www.google.com	Show Header Informations of URL
whois <host>	Show NS, DNS, Register about a host (e.g.: whois google.com)
host <host>	DNS Lookup of a host (e.g.: host google.com)
dig <host>	DNS Lookup of a host (verbose) (e.g.: dig google.com)
rsync -avz myfolder somehost:/var/www/	Sync a folder to a remote host and specific path
rsync -avz somehost:/var/www/ .	Sync from remote host and specific path to local folder

rsync -avz <dirSource> <dirTarget>	Sync entire Folder (locally)
rsync -avz <dirSource>/ <dirTarget>	Sync only contents of folder (locally)

Command-Line Operators

Command	Description
<command> > file.txt	Write output of a command into a file (creates/overwrites file)
<command> >> file.txt	Write output of a command into a file (appends at end of file)
<command1> && <command2>	Do command2 only if command1 succeeds
<command1> <command2>	Do command2 only if command1 fails
<command1> <command2>	Pipe command1 output into command2
!	Negation Operator (e.g. find . ! -user "root")
More about operators: linux-command-operators	

Other helpful Commands

Command	Description
bash myCustomScript.sh	Execute a bash script
history tail	Show last 10 lines of your history (commands)
htop	Very helpful utility to show all process, cpu, ram, ..
ps aux grep http	Show processes who accesses http
which <command>	Show path location of a command
tar -cvf myfolder.tar myfolder	Create a compressed tar file of a folder
tar -xvf myfolder.tar	Extract a compressed tar file
zip -r myfolder.zip myfolder	Create a compressed zip file
unzip myfolder.zip	Extract a compressed zip file

EDITOR=nano crontab -e	Set Editor for current shell only (temporarily)
select-editor	Set Editor for user (usually permanently)
vim file.txt	Edit a file in the Vim Editor
nano file.txt	Edit a file in the Nano Editor
sudo su - www-data -s /bin/bash	Switch User to example "www-data"

SSH Setup & Security

SSH File Structure

File-/Folder Structure	Description	Security
~	User Home Directory (e.g. ~ can be /home/username)	
~/.ssh	SSH Ordner im Home Verzeichnis	<div>chmod 700 ~/.ssh</div>
~/.ssh/config	<p>Erstelle einen neuen Host Eintrag in der ssh config, der Aufbau sollte wie folgt aussehen:</p> <div>Host SomeHostAliasName HostName domain.tld # or IP User root # or another user</div> <p>Eine Verbindung kann dann wie folgt durchgeführt werden:</p> <div>ssh SomeHostAliasName</div>	<div>chmod 600 ~/.ssh/config</div>
~/.ssh/id_rsa	Dein Private Key (niemals an andere übermitteln!!)	<div>chmod 600 ~/.ssh/id_rsa</div>
~/.ssh/id_rsa.pub	Dein Public Key (zum übermitteln an Dritte für Remote-Server Einrichtung)	<div>chmod 600 ~/.ssh/id_rsa.pub</div>
~/.ssh/authorized_keys	Public Keys die Zugriff auf den aktuellen Host haben	<div>chmod 600 ~/.ssh/authorized_keys</div>
~/.ssh/known_hosts	Einträge zu (trusted) Hosts (Einträge werden i.d.R. automatisch ermittelt und per User Prompt zur Bestätigung erfragt)	<div>chmod 600 ~/.ssh/known_hosts</div>

SSH Commands

Command	Description
ssh someHostAliasName	Connect to a host from your ~/.ssh/config
ssh-keygen -t rsa -b 4096 -C "your_email@example.com"	Create a 4096Bit encrypted SSH Key
ssh-copy-id someHostAliasName	Copies your current ssh pub key to a remote host (Alternatively connect to the ssh host and add your public key content to the file ~/.ssh/authorized_keys)
ssh -Tv git@github.com	Analyze if a ssh connection is possible to a host (e.g. git@github.com)
ssh -o PubkeyAuthentication=no -o PreferredAuthentications=password someHostAliasName	Check if a host allows password authentication

SSH Hardening:

This hardens SSH + Disables Root Access (do this only if you know what you are doing!!)
Edit sshd_config (e.g. `vim /etc/ssh/sshd_config`) and change/add the following:

```
PermitRootLogin no      # or "prohibit-password"
PubkeyAuthentication yes
PasswordAuthentication no  # or use Match Blocks instead (see: https://ostechnix.com/disable-ssh-password-
authentication-for-specific-user-or-group/)
PermitEmptyPasswords no
ChallengeResponseAuthentication no
UsePAM no
X11Forwarding no

# Optional:
# Match User app-*
#     PasswordAuthentication yes
#
# Match User admin-*
#     PasswordAuthentication no
```

After changing the file restart the ssh service: `systemctl restart sshd` and verify if you are still able to connect (use a different user than root)!

Cronjobs

Default PHP-Script Aufruf:

```
*/5 * * * * [path/to/php] [absPath/to/script]
```

PHP-Script Aufruf mit env Variable:

e. g. * * * * * TYPO3_CONTEXT=Development/Server /[absPathToPHP]/php7.4-cli -f
~/[absPath]/typo3/sysext/core/bin/typo3 scheduler:run

```
*/5 * * * * [ENV-Variable] [path/to/php] [absPath/to/script]
```