Linux Einführung

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Inhalt

1. Linux

- ab 1991 von dem Finnen Linux Torvalds entwickelt
- organisiert Kernelentwicklung bis heute
- UNIX-ähnliches, POSIX-kompatibles OS

2. Filesystem

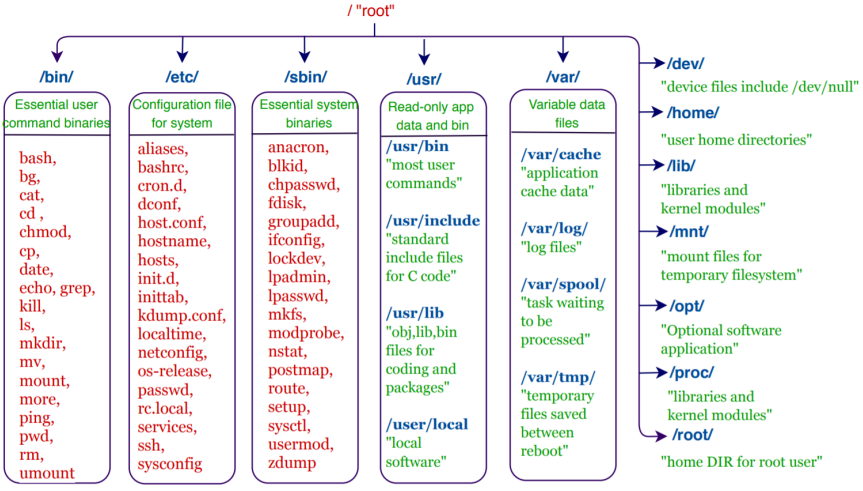

Abbildung: Verzeichnisstruktur [22]

3. Navigation im Terminal

- `whoami`
- `pwd` (print working directory)
- `history`
- `date`

- `tree`
- `ls` (list)
- `ls -a -l`

Change directories

- `cd cd .. cd ../../..`
- absolute path
- relative path

4. Inhalt bearbeiten

- `touch`
- `nano`, `vim` und `emacs`
- `mkdir`
- `rm`
- `chmod`
- `file`

5. Unix Stuff

Aktueller Benutzer — *id*

```
[me@w1n5t0n:/tmp]$ id
uid=1000(me) gid=100(users) groups=100(users),1(wheel),6(disk),17(audio),19(uucp),26(video
),31(davfs2),57(networkmanager),131(docker),999(adbusers)
```

Aktuell aktive Benutzer — *w*

```
me@morpheus:~$ w
 18:28:10 up 146 days,  5:16,  2 users,  load average: 0.74, 0.67, 0.75
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
me       pts/0    178.27.192.139   18:28    1.00s  4:34   0.00s w
me       pts/1    178.27.192.139   18:28    1.00s  0.01s  0.01s -bash
```

```
MAN(1)                          Manual pager utils                          MAN(1)

NAME
       man - an interface to the system reference manuals

SYNOPSIS
       man [man options] [[section] page ...] ...
       man -k [apropos options] regexp ...
       man -K [man options] [section] term ...
       man -f [whatis options] page ...
       man -l [man options] file ...
       man -w|-W [man options] page ...

DESCRIPTION
       man  is  the system's manual pager.  Each page argument given to man is normally
       the name of a program, utility or function.  The  manual  page  associated  with
       each  of  these  arguments is then found and displayed.  A section, if provided,
       will direct man to look only in that section of the manual.  The default  action
       is to search in all of the available sections following a pre-defined order (see
       DEFAULTS), and to show only the first page found, even if page exists in several
       sections.
```

6. Dateien Analysieren

cat Für Textdateien

xxd Für Binärdateien

Dateiinhalt einsehen — *cat*

```
[me@w1n5t0n tmp]$ cat testdatei
hello, world!
```

Dateiinhalt einsehen — *xxd*

```
[nix-shell:/tmp]$ xxd -g 1 testdatei
00000000: 68 65 6c 6c 6f 2c 20 77 6f 72 6c 64 21 0a       hello, world!.
```

In Dateien Suchen — *grep*

- `grep regex dataname`
- `grep --ignore-case regex dataname`
- `grep -F kein-regex dataname`

In Dateien Suchen — *grep*

```
[me@w1n5t0n:/tmp]$ cat testfile
a.
b
c
abc
ac
A

[me@w1n5t0n:/tmp]$ grep a testfile
a.
abc
ac
```

```
[me@w1n5t0n:/tmp]$ grep a. testfile
a.
abc
ac

[me@w1n5t0n:/tmp]$ grep --ignore-case a testfile
a.
abc
ac
A

[me@w1n5t0n:/tmp]$ grep -F a. testfile
a.
```

- Ausgabe in Datei umleiten: >
- Verketten durch pipes: |
- Ausgabe von `cmdA` als temporäre Datei für `cmdB`:
  `cmdB <(cmdA)`

Ausgaben Umleiten und Wiederverwenden

```
[me@w1n5t0n:/tmp]$ grep -F a. testfile > results

[me@w1n5t0n:/tmp]$ cat results
a.

[me@w1n5t0n:/tmp]$ curl https://example.com/index.html | grep doctype
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  1256  100  1256    0     0   2219      0 --:--:-- --:--:-- --:--:--  2223
<!doctype html>
```

Ausgabe als temporäre Datei

```
[me@w1n5t0n:/tmp]$ grep -F a. <(cat testfile)
a.
```

Strings in Binärdateien finden — *strings*

```
[me@w1n5t0n:/tmp]$ strings -n 10 /bin/sh
/nix/store/vósznófczjbn54h7y40aj7qjijq7j6dc-glibc-2.34-210/lib/ld-linux-x86-64.so.2
__gmon_start__
rl_filename_stat_hook
history_write_timestamps
rl_get_termcap
write_history
rl_vi_editing_mode
rl_completion_quote_character
rl_vi_start_inserting
history_set_pos
rl_redraw_prompt_last_line
rl_terminal_name
rl_startup_hook
sh_unset_nodelay_mode
rl_function_of_keyseq_len
rl_readline_name
```

7. Networking

Dateien Herunterladen — *wget*

```
[me@w1n5t0n:/tmp]$ wget https://example.com/index.html
--2022-10-03 18:11:43--  https://example.com/index.html
Resolving example.com (example.com)... 93.184.216.34, 2606:2800:220:1:248:1893:25c8:1946
Connecting to example.com (example.com)|93.184.216.34|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1256 (1.2K) [text/html]
Saving to: 'index.html'

index.html            100%[=========================>]   1.23K  --.-KB/s    in 0s

2022-10-03 18:11:44 (39.9 MB/s) - 'index.html' saved [1256/1256]
```

Dateien Herunterladen — *curl*

```
[me@w1n5t0n:/tmp]$ curl https://example.com/index.html
<!doctype html>
<html>
<head>
    <title>Example Domain</title>

    <meta charset="utf-8" />
    <meta http-equiv="Content-type" content="text/html; charset=utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <style type="text/css">
```

```
[me@w1n5t0n:/tmp]$ nmap example.com
Starting Nmap 7.92 ( https://nmap.org ) at 2022-10-03 18:21 CEST
Nmap scan report for example.com (93.184.216.34)
Host is up (0.20s latency).
Other addresses for example.com (not scanned): 2606:2800:220:1:248:1893:25c8:1946
Not shown: 996 filtered tcp ports (no-response)
PORT     STATE  SERVICE
80/tcp   open   http
443/tcp  open   https
1119/tcp closed bnetgame
1935/tcp closed rtmp

Nmap done: 1 IP address (1 host up) scanned in 16.55 seconds
```

DNS Lookups — *dig*

```
[me@w1n5t0n:/tmp]$ dig +nocomments example.com

; <<>> DiG 9.18.7 <<>> +nocomments example.com
;; global options: +cmd
;example.com.                   IN      A
example.com.            85858   IN      A       93.184.216.34
;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Mon Oct 03 18:19:32 CEST 2022
;; MSG SIZE  rcvd: 56


[me@w1n5t0n:/tmp]$ dig AAAA +nocomments example.com

; <<>> DiG 9.18.7 <<>> AAAA +nocomments example.com
;; global options: +cmd
;example.com.                   IN      AAAA
example.com.            85854   IN      AAAA    2606:2800:220:1:248:1893:25c8:1946
;; Query time: 1 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Mon Oct 03 18:19:36 CEST 2022
;; MSG SIZE  rcvd: 68
```

[22] *Classic SysAdmin: The Linux Filesystem Explained*. https://www.linuxfoundation.org/blog/blog/classic-sysadmin-the-linux-filesystem-explained. Feb. 2022. URL: https://www.linuxfoundation.org/blog/blog/classic-sysadmin-the-linux-filesystem-explained (besucht am 21. 10. 2022).