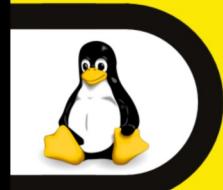


Moderne Kommandozeilen Werkzeuge



17. Linux-Infotag
Samstag, 21. April 2018

9:30 Uhr bis 17:00 Uhr
Hochschule Augsburg

linux user group
luga
augsburg e.v.



Hochschule
Augsburg University of
Applied Sciences

#LIT18

@LEYRER

Plan

Historie / Abgrenzung

systemd

dig

tracepath / mtr

iproute2

tmux

zsh

HTTPie / aria2c

ripgrep

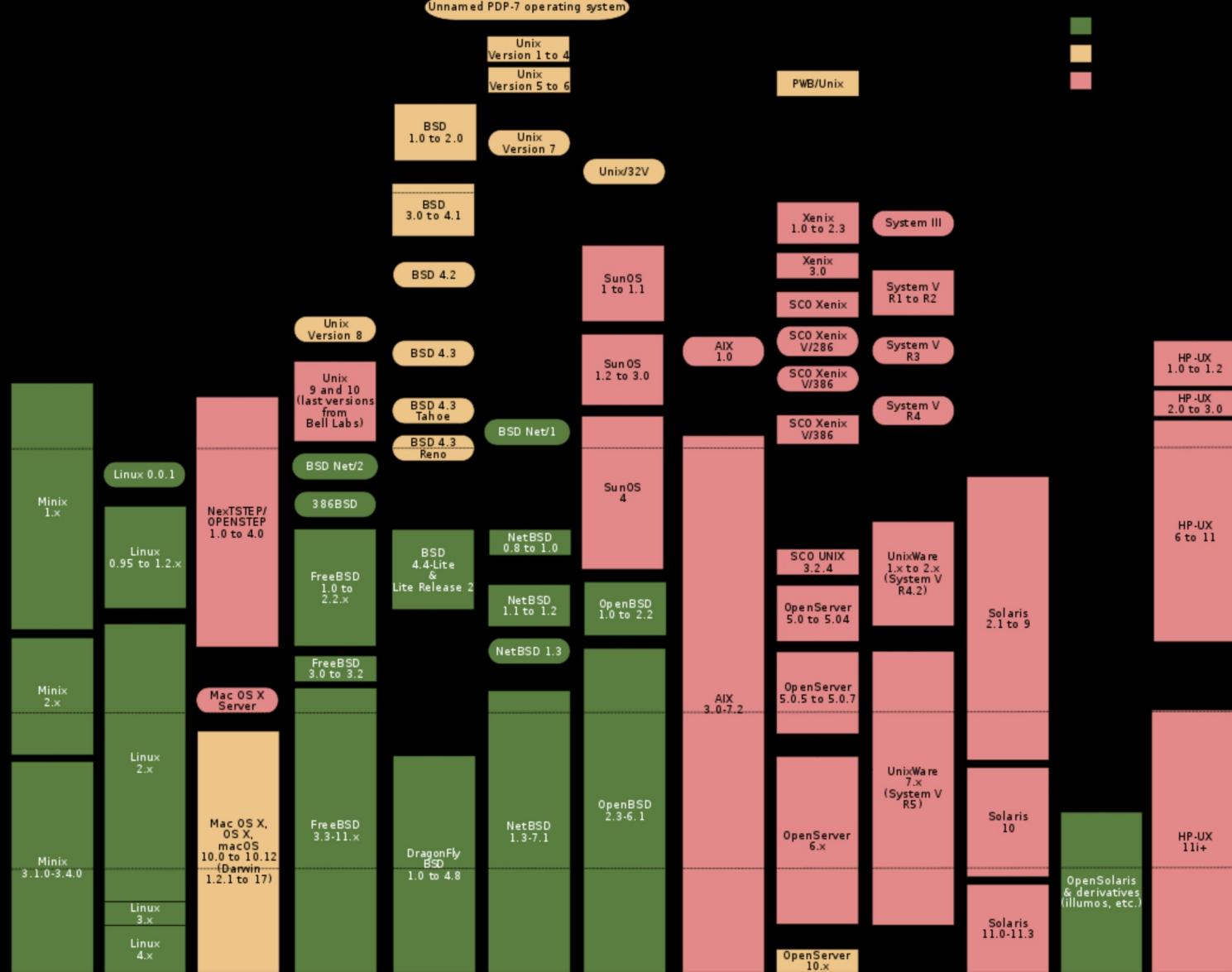
exa

fzf

icdiff

pv / progress

Eure Vorschläge



The UNIX philosophy

Doug McIlroy, Bell System Technical Journal 1978

http://emulator.pdp-11.org.ru/misc/1978.07_-_Bell_System_Technical_Journal.pdf

The UNIX philosophy

Erstelle Programme so, dass sie eine Aufgabe richtig erfüllen. Wenn es eine neue Aufgabe gibt, beginne ein neues Programm anstatt das andere zu verkomplizieren.

The UNIX philosophy

Gehe davon aus, dass die Ausgaben eines Programms die Eingabe eines anderen sein können, selbst wenn Du dieses noch nicht kennst. Programme sollten nicht schwafeln, halte die Ausgaben kurz und einfach verarbeitbar.

The UNIX philosophy

Lass Computer-Tools die Arbeit für Dich machen,
nicht die Hilfskräfte.

The UNIX philosophy

Peter H. Salus in “A Quarter-Century of Unix” (1994):

- Write programs that do one thing and do it well.
- Write programs to work together.
- Write programs to handle text streams, because that is a universal interface.

“simpel”

```
$ cat post-list.csv | split -l 30 -  
--filter='jq -R . | jq --slurp -c .'  
| xargs -d "\n" -I % sh -c 'curl -H  
"Content-Type: application/json" -X  
POST -d '""'{"type":1,"entries":  
%}'""' http://127.0.0.1:8080/purge-  
something && sleep 30'
```

Single UNIX Specification

Product	Vendor	Architecture	UNIX V7	UNIX 03	UNIX 98	UNIX 95	UNIX 93
AIX	IBM Corporation	PowerPC	No	Yes	Yes	No	No
FTX	Cemprus LLC	PA-RISC	No	No	No	No	Yes
EulerOS	Huawei	x86-64	No	Yes	No	No	No
HP-UX	Hewlett-Packard Company	IA-64, PA-RISC	No	Yes	No	Yes	No
IRIX	Silicon Graphics, Inc.	MIPS	No	No	No	Yes	No
K-UX	Inspur	x86-64	No	Yes	No	No	No
macOS	Apple	x86-64	No	Yes	No	No	No
OpenServer	Xinuos	IA-32	No	No	No	No	Yes
Solaris	Oracle Corporation	IA-32, x86-64, SPARC	No	Yes	Yes	No	No
Tru64 UNIX	DEC	Alpha	No	No	Yes	No	No
UnixWare	Xinuos	IA-32	No	No	No	Yes	No
z/OS USS	IBM Corporation	z/Architecture	No	No	No	Yes	No

IEEE Std 1003.1-2008 utilities

admin, alias, ar, asa, at, awk, basename, batch, bc, bg, cc/c99, cal, cat, cd, cflow, chgrp, chmod, chown, cksum, cmp, comm, command, compress, cp, crontab, csplit, ctags, cut, cxref, date, dd, delta, df, diff, dirname, du, echo, ed, env, ex, expand, expr, false, fc, fg, file, find, fold, fort77, fuser, gencat, get, getconf, getopt, grep, hash, head, iconv, id, ipcrm, ipcs, jobs, join, kill, lex, link, ln, locale, localedef, logger, logname, lp, ls, m4, mailx, make, man, mesg, mkdir, mkfifo, more, mv, newgrp, nice, nl, nm, nohup, od, paste, patch, pathchk, pax, pr, printf, prs, ps, pwd, qalter, qdel, qhold, qmove, qmsg, qrerun, qrls, qselect, qsig, qstat, qsub, read, renice, rm, rmdel, rmdir, sact, sccs, sed, sh, sleep, sort, split, strings, strip, stty, tabs, tail, talk, tee, test, time, touch, tput, tr, true, tsort, tty, type, ulimit, umask, unalias, uname, uncompress, unexpand, unget, uniq, unlink, uucp, uudecode, uuencode, uustat, uux, val, vi, wait, wc, what, who, write, xargs, yacc, zcat

POSIX

- Portable Operating System Interface
- pahz-icks, as in positive, not poh-six
- Defines
 - application programming interface (API)
 - command line shells
 - utility interfaces

Linux Standard Base (LSB)

- Basiert auf POSIX und der Single UNIX Specification
- The goal of the LSB is to develop and promote a set of open standards that will increase compatibility among Linux distribution ...
- ... few Linux distributions actually go through certification as LSB compliant

LSB commands and utilities

```
[, dmesg, id, more, sleep, ar, du, install, mount, sort, at, echo, install_initd,  
msgfmt, split, awk, ed, ipcrm, mv, strip, basename, egrep, ipcs, newgrp, stty,  
batch, env, join, nice, su, bc, expand, kill, nl, sync, cat, expr, killall, nohup,  
tail, chfn, false, ln, od, tar, chgrp, fgrep, locale, passwd, tee, chmod, file,  
localeddef, paste, test, chown, find, logger, patch, time, chsh, fold, logname,  
pathchk, touch, cksum, fuser, lp, pax, tr, cmp, gencat, lpr, pidof, true, col,  
getconf, ls, pr, tsort, comm, gettext, lsb_release, printf, tty, cp, grep,  
lsbinstall, ps, umount, cpio, groupadd, m4, pwd, uname, crontab, groupdel, mailx,  
remove_initd, unexpand, csplit, groupmod, make, renice, uniq, cut, groups, man,  
rm, useradd, date, gunzip, md5sum, rmdir, userdel, dd, gzip, mkdir, sed, usermod,  
df, head, mkfifo, sendmail, wc, diff, hostname, mknod, sh, xargs, dirname, iconv,  
mktemp, shutdown, cd, getopt, read, umask, wait
```

util-linux

addpart, getty, blkdiscard, blkid, blockdev, cal, cfdisk, chcpu, chfn, chrt,
chsh, col, colcrt, colrm, column, ctrlaltdel, delpart, dmesg, eject, fallocate,
fdformat, fdisk, findfs, findmnt, flock, fsck, fsck.cramfs, fsck.minix,
fsfreeze, fstab, fstrim, getopt, hexdump, hwclock, ionice, ipcmk, ipcrm, ipcs,
isosize, kill, last, ldattach, line, logger, login, look, losetup, lsblk,
lscpu[6], lslocks, lslogins, mcookie, mesg, mkfs, mkfs.bfs, mkfs.cramfs,
mkfs.minix, mkswap, more, mount, mountpoint, namei, newgrp, nologin, nsenter,
partx, pg, pivot_root, prlimit, raw, readprofile, rename, renice, reset,
resizepart, rev, RTCAlarm, runuser, script, scriptreplay, setarch, setpriv,
setsid, setterm, sfdisk, su, sulogin, swaplabel, swapoff, swapon, switch_root,
tailf, taskset, tunelp, ul, umount, unshare, utmpdump, uuidd, uuidgen, vipw,
wall, wdctl, whereis, wipefs, write, zramctl

GNU Core Utilities commands

chcon, chgrp, chown, chmod, cp, dd, df, dir, dircolors, install, ln, ls, mkdir, mkfifo, mknod, mktemp, mv, realpath, rm, rmdir, shred, sync, touch, truncate, vdir, b2sum, base32, base64, cat, cksum, comm, csplit, cut, expand, fmt, fold, head, join, md5sum, nl, numfmt, od, paste, ptx, pr, sha1sum, sha224sum, sha256sum, sha384sum, sha512sum, shuf, sort, split, sum, tac, tail, tr, tsort, unexpand, uniq, wc, arch, basename, chroot, date, dirname, du, echo, env, expr, factor, false, groups, hostid, id, link, logname, nice, nohup, nproc, pathchk, pinky, printenv, printf, pwd, readlink, runcon, seq, sleep, stat, stdbuf, stty, tee, test, timeout, true, tty, uname, unlink, uptime, users, who, whoami, yes

Regeln des Talks

1. Wir sprechen nicht über Tools, die am Rechner laufende Server brauchen.
2. Wir sprechen nicht über Tools, die am Rechner laufende Server brauchen.

Full text searching Linux man pages with Elasticsearch

Apr 12, 2018 - 16:00 | tutorials

Tags: elasticsearch - linux - man-pages - opensource - tutorial - ruby

In this post we are going to play around with full text searching with Elasticsearch and Linux man pages.

The idea

We will:

1. setup an **Elasticsearch** instance locally
2. create an index for the data
3. feed the index with man pages
4. create a search interface
5. full text search the index

```
search('edit image').each{ |a| puts "#{a[:command].ljust(20)} - #{a[:description]}"}; nil
gimp-2.8          - an image manipulation and paint program.
gimp              - an image manipulation and paint program.
Image::Magick::Q16 - objected-oriented Perl interface to ImageMagick (Q16). Use it to create, edit, co
gimp-console-2.8  - an image manipulation and paint program.
gimp-console      - an image manipulation and paint program.
bitmap            - bitmap editor and converter utilities for the X Window System
bmtoa             - bitmap editor and converter utilities for the X Window System
atobm             - bitmap editor and converter utilities for the X Window System
mailcap.order     - the mailcap ordering specifications
xwd               - dump an image of an X window
```

man -k

```
$ man -k edit image
Image::Grab (3pm)      - Perl extension for Grabbing images off the Internet.
411toppm (1)           - convert Sony Mavica .411 image to ppm
animate (1)             - animates an image or image sequence on any X server.
animate-im6 (1)         - animates an image or image sequence on any X server.
anytopnm (1)            - attempt to convert an unknown type of image file to a portable anymap
atobm (1)               - bitmap editor and converter utilities for the X Window System
bitmap (1)              - bitmap editor and converter utilities for the X Window System
bless (1)               - graphical hexadecimal Gtk# editor
bmp2tiff (1)            - create a TIFF file from a Microsoft Windows Device Independent Bitmap image file
bmtoa (1)               - bitmap editor and converter utilities for the X Window System
btrfs-image (8)          - create/restore an image of the filesystem
btrfs-restore (8)        - try to restore files from a damaged btrfs filesystem image
carousel (6x)            - displays multiple images rotating in a circular formation
cinnamon-menu-editor (1) - Editor for the panel menu
cjpeg (1)                - compress an image file to a JPEG file
compare (1)              - mathematically and visually annotate the difference between an image and its ...
compare-im6 (1)          - mathematically and visually annotate the difference between an image and its ...
composite (1)            - overlaps one image over another.
composite-im6 (1)        - overlaps one image over another.
convert (1)              - convert between image formats as well as resize an image, blur, crop, despeck...
convert-im6 (1)          - convert between image formats as well as resize an image, blur, crop, despeck...
```

apropos

```
$ apropos edit image
Image::Grab (3pm)      - Perl extension for Grabbing images off the Internet.
411toppm (1)            - convert Sony Mavica .411 image to ppm
animate (1)              - animates an image or image sequence on any X server.
animate-im6 (1)          - animates an image or image sequence on any X server.
anytopnm (1)             - attempt to convert an unknown type of image file to a portable anymap
atobm (1)                - bitmap editor and converter utilities for the X Window System
bitmap (1)               - bitmap editor and converter utilities for the X Window System
bless (1)                - graphical hexadecimal Gtk# editor
Bbmp2tiff (1)            - create a TIFF file from a Microsoft Windows Device Independent Bitmap image file
bmtoa (1)                - bitmap editor and converter utilities for the X Window System
btrfs-image (8)           - create/restore an image of the filesystem
btrfs-restore (8)          - try to restore files from a damaged btrfs filesystem image
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compare-im6 (1)           - mathematically and visually annotate the difference between an image and its ...
composite (1)              - overlaps one image over another.
composite-im6 (1)          - overlaps one image over another.
convert (1)                - convert between image formats as well as resize an image, blur, crop, despeck...
convert-im6 (1)            - convert between image formats as well as resize an image, blur, crop, despeck...
cpaldjvu (1)               - DjVuDocument encoder for low-color images.
dcfujiareen (1)            - Alternative processing for Fuji RAW images.
```

systemd

- Löst(e) UNIX System V init scripts ab
- Sorgt für “Spaß” am Gerät (ymmv)
 - <https://twitter.com/systemdsucks>

systemd

Old and tired

/etc/init.d/tool start

/etc/init.d/tool stop

/etc/init.d/tool
restart

/etc/init.d/tool
status

New Hotness

systemctl start tool

systemctl stop tool

systemctl restart tool

systemctl status tool

```
$ /etc/init.d/apache2 status  
* apache2 is running
```

```
apache2.service - LSB: Apache2 web server
 Loaded: loaded (/etc/init.d/apache2)
 Active: failed (Result: exit-code) since Wed 2016-03-09 10:32:34 GMT; 9s ago
   Docs: man:systemd-sysv-generator(8)
Process: 3479 ExecStop=/etc/init.d/apache2 stop (code=exited, status=0/SUCCESS)
Process: 3503 ExecStart=/etc/init.d/apache2 start (code=exited, status=1/FAILURE)
```

```
Mar 09 10:32:34 Ubuntu14 apache2[3503]: *
Mar 09 10:32:34 Ubuntu14 apache2[3503]: * The apache2 configtest failed.
Mar 09 10:32:34 Ubuntu14 apache2[3503]: Output of config test was:
Mar 09 10:32:34 Ubuntu14 apache2[3503]: apache2: Syntax error on line 224 of...y
Mar 09 10:32:34 Ubuntu14 apache2[3503]: Action 'configtest' failed.
Mar 09 10:32:34 Ubuntu14 apache2[3503]: The Apache error log may have more i.....
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Control process exite...=1
Mar 09 10:32:34 Ubuntu14 systemd[1]: Failed to start LSB: Apache2 web server.
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Unit entered failed state.
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Failed with result 'e...'.
Hint: Some lines were ellipsized, use -l to show in full.
```

journalctl

```
leyrer@eh18demo:~% journalctl -u apache2.service
-- Logs begin at Sam 2018-03-31 12:24:35 CEST, end at Sam 2018-03-31 20:16:36 CEST.
--
Mär 31 12:25:02 Betty systemd[1]: Starting LSB: Apache2 web server...
Mär 31 12:25:02 Betty apache2[1256]: * Starting Apache httpd web server apache2
Mär 31 12:25:04 Betty apache2[1256]: AH00558: apache2: Could not reliably determine
the server's fully qualified domain name
Mär 31 12:25:05 Betty apache2[1256]: *
Mär 31 12:25:05 Betty systemd[1]: Started LSB: Apache2 web server.
```

nslookup / dig

- DNS Abfragen
- Hostnamen, IP-Adressen, MX-Records, etc.

```
$ dig www.luga.de

; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59144
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.luga.de.      IN  A

;; ANSWER SECTION:
www.luga.de.    17643  IN  A   213.179.141.18

;; Query time: 2 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Fri Apr 20 13:49:17 CEST 2018
;; MSG SIZE  rcvd: 56
```

```
; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
```

```
; ; Got answer:  
; ; ->>>HEADER<<<- opcode: QUERY, status: NOERROR,  
id: 59144  
; ; flags: qr rd ra; QUERY: 1, ANSWER: 1,  
AUTHORITY: 0, ADDITIONAL: 1
```

; ; QUESTION SECTION:
;www.luga.de. INA

; ; ANSWER SECTION:
www.luga.de. 17643 INA 213.179.141.18

;; Query time: 2 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Fri Apr 20 13:49:17 CEST 2018
;; MSG SIZE rcvd: 56

```
$ dig www.luga.de

; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59144
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.luga.de.      IN  A

;; ANSWER SECTION:
www.luga.de.    17643  IN  A   213.179.141.18

;; Query time: 2 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Fri Apr 20 13:49:17 CEST 2018
;; MSG SIZE  rcvd: 56
```

```
$ dig +short www.luga.de  
213.179.141.18
```

```
$ nslookup www.luga.de  
Server: 127.0.1.1  
Address: 127.0.1.1#53
```

```
Non-authoritative answer:  
Name: www.luga.de  
Address: 213.179.141.18
```

```
$ dig www.luga.de  
;; ANSWER SECTION:  
www.luga.de.    17374  INA 213.179.141.18
```

```
$ nslookup -q=mx luga.de
```

```
Server: 127.0.1.1
```

```
Address: 127.0.1.1#53
```

```
Non-authoritative answer:
```

```
luga.de mail exchanger = 100 mail.luga.de.
```

```
$ dig luga.de MX
```

```
; ; ANSWER SECTION:
```

```
luga.de. 21562 IN MX 100 mail.luga.de.
```

tracepath

- Userspace Version von traceroute
- Kann die “Path MTU” ermitteln

```
$ tracepath -b www.luga.de
1?: [LOCALHOST]                                     pmtu 1500
1: 192.168.32.1 (192.168.32.1)                  3.304ms
1: 192.168.32.1 (192.168.32.1)                  62.963ms
1: 192.168.32.1 (192.168.32.1)                  1.560ms
1: 192.168.32.1 (192.168.32.1)                  60.322ms
2: 172.19.5.1 (172.19.5.1)                      1.702ms
3: 10.241.145.0 (10.241.145.0)                  46.188ms
4: 213.208.157.126 (213.208.157.126)          44.827ms
5: 217.175.203.34 (217.175.203.34)            115.700ms
6: ae35.r17.esh.vie.nextlayer.at (81.16.149.253) 64.974ms
7: no reply
8: 92.60.1.231 (92.60.1.231)                  50.190ms asymm 7
9: ae13.r06.inx.fra.de.nextlayer.net (92.60.2.127) 49.529ms asymm 7
10: rt-decix-2.m-online.net (80.81.192.7)        70.008ms asymm 8
11: te2-0-0.ac3.muc7.m-online.net (212.18.7.23)   76.712ms pmtu 1492
11: host-212-114-222-188.customer.m-online.net (212.114.222.188) 68.425ms
asymm 10
12: host-212-114-222-188.customer.m-online.net (212.114.222.188) 68.777ms
asymm 10
13: www.luga.de (213.179.141.18)                179.315ms reached
Resume: pmtu 1492 hops 13 back 11
```

mtr - My Traceroute

- Kombiniert ping und traceroute
- Aktualisiert sich laufend
- Bietet auch GUI-Varianten (ncurses, Gtk)

DEMO TIME

```
$ mtr --report www.luga.de
```

```
Start: Fri Apr 20 13:59:02 2018
```

```
HOST: Betty
```

		Loss%	Snt	Last	Avg	Best	Wrst	StDev
1.	-- 192.168.32.1	0.0%	10	2.5	7.7	2.5	23.0	6.2
2.	-- 172.19.5.1	0.0%	10	199.5	64.2	1.4	366.3	122.3
3.	-- 10.241.145.0	90.0%	10	38.5	38.5	38.5	38.5	0.0
4.	-- 10.241.145.0	90.0%	10	87.9	87.9	87.9	87.9	0.0
5.	-- 10.241.145.0	90.0%	10	113.1	113.1	113.1	113.1	0.0
6.	-- 10.241.145.0	90.0%	10	264.1	264.1	264.1	264.1	0.0
7.	-- 10.241.145.0	80.0%	10	509.9	340.5	171.2	509.9	239.5
8.	-- 10.241.145.0	80.0%	10	114.5	108.0	101.6	114.5	9.1
9.	-- 10.241.145.0	80.0%	10	55.0	70.9	55.0	86.8	22.5
10.	-- 10.241.145.0	50.0%	10	71.6	99.9	44.7	233.6	75.9
11.	-- ???	100.0	10	0.0	0.0	0.0	0.0	0.0
12.	-- ???	100.0	10	0.0	0.0	0.0	0.0	0.0
13.	-- 10.241.145.0	90.0%	10	77.8	77.8	77.8	77.8	0.0
14.	-- ???	100.0	10	0.0	0.0	0.0	0.0	0.0

iproute2 (ip)

- Löst ifconfig, route, ... ab
- Konsistenter:
`ip addr [befehl] [argumente]`
 - ip link – L2: MTU, VLANs, bridges, ...
 - ip addr – L3 addresses
 - ip neigh – ARP/ND
 - ip route – Routing + MPLS

Geräte und Konfiguration

Old and tired

ifconfig

New Hotness

ip addr show
ip link show

```
$ ip addr show
...
3: wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc mq
state UP group default qlen 1000
    link/ether a4:4e:31:95:9f:58 brd ff:ff:ff:ff:ff:ff
    inet 172.18.251.101/16 brd 172.18.255.255 scope global wlan0
        valid_lft forever preferred_lft forever
    inet6 fe80::a64e:31ff:fe95:9f58/64 scope link
        valid_lft forever preferred_lft forever
```

```
$ ip link show  
...  
3: wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc mq  
state UP mode DORMANT group default qlen 1000  
    link/ether a4:4e:31:95:9f:58 brd ff:ff:ff:ff:ff:ff
```

NIC up/down

Old and tired

```
ifconfig eth0 up
```

New Hotness

```
ip link set eth0  
up
```

```
ifconfig eth0 down
```

```
ip link set eth0  
down
```

IP Adresse setzen

Old and tired

```
ifconfig eth0  
192.168.0.42  
netmask  
255.255.255.0  
broadcast  
192.168.0.255
```

New Hotness

```
ip addr add  
192.168.0.42/24  
broadcast  
192.168.0.255 dev  
eth0
```

IP Adresse löschen

Old and tired

New Hotness

```
ip addr del  
192.168.0.42/24  
dev eth0
```

ARP Eintrag hinzufügen

Old and tired

```
arp -i eth0 -s  
192.168.0.1  
00:11:22:33:44:55
```

New Hotness

```
ip neigh add  
192.168.0.1 lladdr  
00:11:22:33:44:55  
nud permanent dev  
eth0
```

Route anzeigen

Old and tired

route

New Hotness

ip route show

Route hinzufügen

Old and tired

```
route add -net  
192.168.3.0/24 dev  
eth3
```

New Hotness

```
ip route add  
192.168.3.0/24 dev  
eth3
```

Mehr route2 Magie

@BarbarossaTM:
Contemporary Linux Networking

<https://www.slideshare.net/BarbarossaTM/contemporary-linux-networking>

tmux

- Terminalmultiplexer
- Gemeinsames Arbeiten in einer Session
- Aktive Entwickel, als screen
- Mehr und moderne Funktionen

DEMO TIME

0 1 tail

15:41:13 ~

\$

```

1 [|||] ] 5 [|||] ]
2 [|||] ] 6 [|||] ]
3 [|||] ] 7 [|||] ]
4 [|||] ] 8 [|||] ]
Mem[||||| 6653 ] Tasks: 214, 1022 thr; 1 running
Swp[ ] Load average: 0.81 0.63
Uptime: 04:12:11

```

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Comm
4010	at007489	20	0	917M	198M	32708	S	13.3	0.8	3:46.34	/usr
4196	at007489	20	0	1966M	252M	96788	S	5.1	1.1	10:31.27	comp
5218	at007489	20	0	32896	5080	2992	R	4.4	0.0	0:01.08	htop
4246	at007489	20	0	1326M	281M	39340	S	3.2	1.2	1:03.35	/usr
1928		20	0	789M	240M	206M	S	2.5	1.0	11:33.06	/usr
4029	at007489	20	0	917M	198M	32708	S	2.5	0.8	1:03.00	/usr

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice -F8Nice +F9K

^C

15:41:22 ~

```

$ tail -F /var/log/syslog
Mar 29 15:38:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:38:48 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:39:12 mother wpa_supplicant[4758]: wlan0: CTRL-EVENT-SCAN-STARTED
Mar 29 15:39:18 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:39:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:39:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:39:48 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:40:48 mother hddtemp[2441]: message repeated 2 times: [ /dev/sdb: ST9500420AS: 35 C]
Mar 29 15:41:12 mother wpa_supplicant[4758]: wlan0: CTRL-EVENT-SCAN-STARTED
Mar 29 15:41:18 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C

```

zsh

- Interaktive Login-Shell
- Kommandozeileninterpreter für Shellskripte
- Erweiterte Bourne-Shell
- Erweiterbar !!!1111elf111!!!!!!

oh-my-zsh

- Themes
- Plugins
- Updates (!)
- <http://ohmyz.sh/>

DEMO TIME



caiogondim@caiogondim: ~ (zsh)

~ {zsh}

Last login: Wed Jan 14 01:21:50 on ttys001

01:24:03 ➞ ~

\$ j



A screenshot of a macOS terminal window. The window has a white title bar at the top with three colored circular icons (red, yellow, green) on the left. The title bar also displays the text "1. nate@adot: ~ (zsh)". Below the title bar is a dark teal background area. In the top-left corner of this area, there is a small blue arrow pointing right, followed by the text "23:26:36" and another blue arrow pointing right. To the right of these arrows is the command "cd ~".

oh-my-zsh Plugins

apache2-macports archlinux asdf aterminal autojump autopep8 aws bower brew
bundler cabal cake capistrano cask catimg celery chruby chucknorris command-not-
found Composer cloudapp coffee common-aliases compleat cpanm debian dircycle
dirhistory dirpersist django dnf docker encode64 fabric fbterm Forklift fasd gas
geeknote gem gpg-agent git gitfast git-extras git-flow git-flow-avh git-hubflow
git_remote_branch github gradle grails httpie history jira jsontools knife laravel4 last-
working-dirlein lighthouse lol macports mercurial meteor mvn mysql-macports nanoc
ng node npm nyan osx pass per-directory-history perl perms pep8 phing pip pod pow
powify pyenv pylint python rails rand-quote redis-cli repo ruby rvm sbt scala screen
sprunge ssh-agent sublime sudo supervisor suse svn svn-fast-info symfony2
systemd taskwarrior terminalapp terminitor textmate tig thor tmux tmuxinator tugboat
urltools vagrant vi-mode virtualenvwrapper web-search yarn yii yii2 yum zeus wd

HTTPie

- cURL wrapper
- Auto-Formatierung
- Farben
- Einfacher Aufruf
- <https://httpie.org/>

```
$ http --verify=no https://www.luga.de/
/usr/lib/python2.7/dist-packages/urllib3/connectionpool.py:794: InsecureRequestWarning: Unverified HTTPS request! It is strongly advised. See: https://urllib3.readthedocs.org/en/latest/security.html
  InsecureRequestWarning)
HTTP/1.1 200 OK
Accept-Ranges: bytes
Cache-Control: max-age=3600
Connection: Keep-Alive
Content-Encoding: gzip
Content-Length: 1501
Content-Type: text/html
Date: Fri, 20 Apr 2018 13:11:37 GMT
ETag: "e20-5683cac52fe80-gzip"
Expires: Fri, 20 Apr 2018 14:11:37 GMT
Keep-Alive: timeout=5, max=100
Last-Modified: Sun, 25 Mar 2018 13:31:22 GMT
Server: Apache/2.4.25 (Debian)
Vary: Accept-Encoding

<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1.0"/>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<link rel="stylesheet" type="text/css" href="/css/luga.css">
<script type="text/javascript" src="/js/luga.js"></script>
<title>LUGA e.V.</title>
</head>
<body>
<div id="main" style="">
    <div class="header">
        
        
    </div>
    <hr>
    <div class="menu">
<a class="h-selected" href="/start/">Start</a>
| <a href="/Wir_ueber_uns/">Wir über uns</a>
| <a href="/Treffen/">Treffen</a>
| <a href="/Angebote/">Angebote</a>
```

HTTPie & JSON

```
$ http PUT example.org name=John email=john@example.org  
PUT / HTTP/1.1  
Accept: application/json, */*  
Accept-Encoding: gzip, deflate  
Content-Type: application/json  
Host: example.org  
  
{  
    "name": "John",  
    "email": "john@example.org"  
}
```

aria2

- Download Utility
- Multi-source
- Multi-protocol
 - HTTP/HTTPS
 - FTP
 - SFTP
 - BitTorrent
 - Metalink

```
$ aria2c -c -j 2 -x 10  
https://archive.org/download/upd-gold/UPD%20Gold  
%20%281995%29%28Weird%20Science%29%28Disc  
%201%20of%204%29%5B%21%5D.iso
```

ripgrep

- rekursives regex grep
- berücksichtigt .gitignore files
- SCHNELL
- <https://github.com/BurntSushi/ripgrep>

Tool	Command	Line count	Time
ripgrep (Unicode)	rg -n -w '[A-Z]+_SUSPEND'	450	0.106s
git grep	LC_ALL=C git grep -E -n -w '[A-Z]+_SUSPEND'	450	0.553s
The Silver Searcher	ag -w '[A-Z]+_SUSPEND'	450	0.589s
git grep (Unicode)	LC_ALL=en_US.UTF-8 git grep -E -n -w '[A-Z]+_SUSPEND'	450	2.266s
sift	sift --git -n -w '[A-Z]+_SUSPEND'	450	3.505s
ack	ack -w '[A-Z]+_SUSPEND'	1878	6.823s
The Platinum Searcher	pt -w -e '[A-Z]+_SUSPEND'	450	14.208s

exa

- ersetzt/erweitert ls
- bunt
- rekursiv
- unterstützt git
- <https://the.exa.website/>

```
[ben ~/C/e/exa:master]
$ exa
Cargo.lock  LICENCE  README.md  generate-testcases.sh  src
Cargo.toml  Makefile  contrib    screenshot.png        target

[ben ~/C/e/exa:master]
$ exa -l
.rw-r--r--  11k ben 18 Nov 18:28 Cargo.lock
.rw-r--r--  549 ben 15 Nov 18:38 Cargo.toml
.rw-r--r--  1.1k ben 23 Nov 2014 LICENCE
.rw-r--r--  775 ben 2 Aug 15:28 Makefile
.rw-r--r--  2.7k ben 19 Nov 13:18 README.md
drwxr-xr-x  - ben 7 Jun 16:45 contrib
.rwxr-xr-x  3.1k ben 3 Sep 13:26 generate-testcases.sh
.rw-r--r--  382k ben 8 Jun 21:00 screenshot.png
drwxr-xr-x  - ben 18 Nov 18:55 src
drwxr-xr-x  - ben 3 Nov 0:48 target

[ben ~/C/e/exa:master]
$ exa -abghHlis
   inode Permissions Links  Size  Blocks User Group Date Modified Name
30030336 .rw-r--r--   1 6.0Ki   16 ben  staff 23 Nov 0:31 .DS_Store
1971258 drwxr-xr-x  15   -   - ben  staff 19 Nov 13:21 .git
30048390 .rw-r--r--   1 20    8 ben  staff 2 Nov 20:45 .gitignore
30163566 .rw-r--r--   1 200   8 ben  staff 4 Nov 16:55 .travis.yml
31959543 .rw-r--r--   1 11Ki   24 ben  staff 18 Nov 18:28 Cargo.lock
31959544 .rw-r--r--   1 549   8 ben  staff 15 Nov 18:38 Cargo.toml
1971322 .rw-r--r--   1 1.1Ki  8 ben  staff 23 Nov 2014 LICENCE
23377412 .rw-r--r--   1 775   8 ben  staff 2 Aug 15:28 Makefile
30163567 .rw-r--r--   1 2.6Ki  8 ben  staff 19 Nov 13:18 README.md
12375448 drwxr-xr-x  4   -   - ben  staff 7 Jun 16:45 contrib
24377288 .rwxr-xr-x  1 3.1Ki  8 ben  staff 3 Sep 13:26 generate-testcases.sh
20087308 .rw-r--r--   1 373Ki 752 ben  staff 8 Jun 21:00 screenshot.png
1971325 drwxr-xr-x  11   -   - ben  staff 18 Nov 18:55 src
30083756 drwxr-xr-x  3   -   - ben  staff 3 Nov 0:48 target

[ben ~/C/e/exa:master]
$ 
```

```
[ben ~/C/e/exa:master]
$ exa --long --grid src/
.rw-r--r--  4.8k ben 18 Nov 18:55 colours.rs      .rw-r--r--@ 4.4k ben 15 Nov 18:38 main.rs
.rw-r--r--  2.9k ben 4 Nov 11:59 dir.rs          .rw-r--r--@ 29k ben 19 Nov 12:45 options.rs
drwxr-xr-x  - ben 4 Nov 16:55 feature           drwxr-xr-x  - ben 18 Nov 18:28 output
.rw-r--r--  19k ben 15 Nov 18:37 file.rs         .rw-r--r--@ 1.7k ben 4 Sep 11:30 term.rs
.rw-r--r--  4.5k ben 2 Sep 16:13 filetype.rs

[ben ~/C/e/exa:master]
$ exa --long --tree src
drwxr-xr-x  - ben 18 Nov 18:55 src
  .rwxr-xr-x  4.8k ben 18 Nov 18:55   colours.rs
  .rw-r--r--  2.9k ben 4 Nov 11:59   dir.rs
  drwxr-xr-x  - ben 4 Nov 16:55   feature
  .rw-r--r--  3.3k ben 4 Nov 11:59   git.rs
  .rw-r--r--  604 ben 26 Aug 12:19   mod.rs
  .rw-r--r--  7.2k ben 4 Nov 16:55   xattr.rs
  .rw-r--r--  19k ben 15 Nov 18:37   file.rs
  .rw-r--r--  4.5k ben 2 Sep 16:13   filetype.rs
  .rw-r--r--  4.4k ben 15 Nov 18:38   main.rs
  .rw-r--r--  29k ben 19 Nov 12:45   options.rs
  drwxr-xr-x  - ben 18 Nov 18:28   output
  .rw-r--r--  5.6k ben 18 Nov 19:02   column.rs
  .rw-r--r--  35k ben 16 Nov 3:05   details.rs
  .rw-r--r--  1.2k ben 3 Nov 11:12   grid.rs
  .rw-r--r--  4.1k ben 15 Nov 18:37   grid_details.rs
  .rw-r--r--  384 ben 29 Jun 14:50   lines.rs
  .rw-r--r--  1.3k ben 18 Nov 18:27   mod.rs
  .rw-r--r--  1.7k ben 4 Sep 11:30   term.rs

[ben ~/C/e/exa:master]
$ 
```

fzf

- Kommandozeilen fuzzy finder
- schnell
- praktisch
- unterstützt vim, tmux, ...
- <https://github.com/junegunn/fzf>

DEMO TIME

```
src/util/eventbox_test.go
src/curses/curses_test.go
src/util/atomicbool.go
src/util/util_test.go
src/tokenizer_test.go
src/chunklist_test.go
src/algo/algo_test.go
src/util/eventbox.go
src/curses/curses.go
src/pattern_test.go
src/options_test.go
src/history_test.go
src/reader_test.go
src/merger_test.go
src/cache_test.go
src/util/util.go
src/tokenizer.go
src/item_test.go
src/constants.go
src/chunklist.go
src/ansi_test.go
src/algo/algo.go
src/terminal.go
src/fzf/main.go
src/pattern.go
> src/options.go
src/matcher.go
src/history.go
src/reader.go
src/merger.go
src/cache.go
src/item.go
src/core.go
src/ansi.go
35/63
> .go$
```

```
package fzf

import (
    "fmt"
    "os"
    "regexp"
    "strconv"
    "strings"
    "unicode/utf8"

    "github.com/junegunn/fzf/src/curses"
    "github.com/junegunn/go-shellwords"
)

const usage = `usage: fzf [options]

Search
      -x, --extended          Extended-search mode
                               (enabled by default; +x or --no-extended to disable)
      -e, --exact              Enable Exact-match
      -i                      Case-insensitive match (default: smart-case match)
      +i                      Case-sensitive match
      -n, --nth=N[...]         Comma-separated list of field index expressions
                               for limiting search scope. Each can be a non-zero
                               integer or a range expression ([BEGIN]..[END]).
      --with-nth=N[...]        Transform the presentation of each line using
                               field index expressions
      -d, --delimiter=STR     Field delimiter regex (default: AWK-style)
      +s, --no-sort            Do not sort the result
      --tac                   Reverse the order of the input
      --tiebreak=CRI[...]     Comma-separated list of sort criteria to apply
                               when the scores are tied [length|begin|end|index]
                               (default: length)
```

icdiff

- ergänzt diff
- klein
- simpel
- <https://www.jefftk.com/icdiff>

Terminal — bash — 48x14

```
~ $ diff button-{a,b}.css
2c2
<   width: 350px;
---
>   width: 400px;
4,6c4,6
<   margin: 0px;
<   padding: 0px;
<   margin-bottom: 15px;
---
>   font-size: 30px;
>   margin: 0;
>   padding: 0;
~ $
```

Terminal — bash — 48x14

```
~ $ icdiff button-{a,b}.css
button-a.css           button-b.css
#input, #button {      #input, #button {
    width: 350px;      width: 400px;
    height: 40px;      height: 40px;
    margin: 0px;        font-size: 30px;
    padding: 0px;        margin: 0;
    margin-bottom: 15px;  padding: 0;
    text-align: center;  text-align: center;
}
~ $
```

progress - Coreutils Progress Viewer

- fokussiert auf coreutils Kommandos (cp, mv, dd, tar, gzip/gunzip, cat, ...)
- zeigt Fortschritt an
- <https://github.com/Xfennec/progress>

```
% dd if=/dev/urandom bs=1M count=500 | pv -petra -s 500m | dd of=/dev/null
500+0 records in/s] [ 150MiB/s] [=====> ] 90% ETA
0:00:00
500+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 3,33126 s, 157 MB/s
0:00:03 [ 150MiB/s] [ 150MiB/s] [=====> ] 100%
1024000+0 records in
1024000+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 3,33104 s, 157 MB/s
```

```
□ progress ▶▶ 1 ▶ cp ▶ 2 ~/Projekte/eh18  
10:21:29 ▶▶ x ~/Projekte/eh18 ▶▶  
$ cp -a ~/* /media/[REDACTED]/MoreData/temp
```

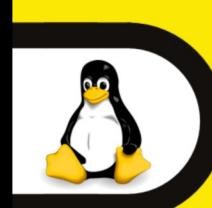
```
< 10:22 < Fre 30 Mär * 96% < CPU 5.74%  
Every 2,0s: progress -q Fri Mar 30 10:22:21 2018  
[12262] cp /home/at007489/Android/Sdk/system-images/android-25/google_apis/x86/system.img  
81.3% (1.6 GiB / 2 GiB)
```

Fragen, Anregungen, weitere Tools?

Martin Leyrer

<https://martin.leyrer.priv.at>

@leyrer on Twitter



17. Linux-Infotag
Samstag, 21. April 2018

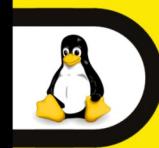
9:30 Uhr bis 17:00 Uhr
Hochschule Augsburg

linux user group
luga
augsburg e.v.



Hochschule
Augsburg University of
Applied Sciences

Moderne Kommandozeilen Werkzeuge



17. Linux-Infotag
Samstag, 21. April 2018

9:30 Uhr bis 17:00 Uhr
Hochschule Augsburg

luga
Linux user group
Hochschule
Augsburg e.V.
University of
Applied Sciences

#LIT18

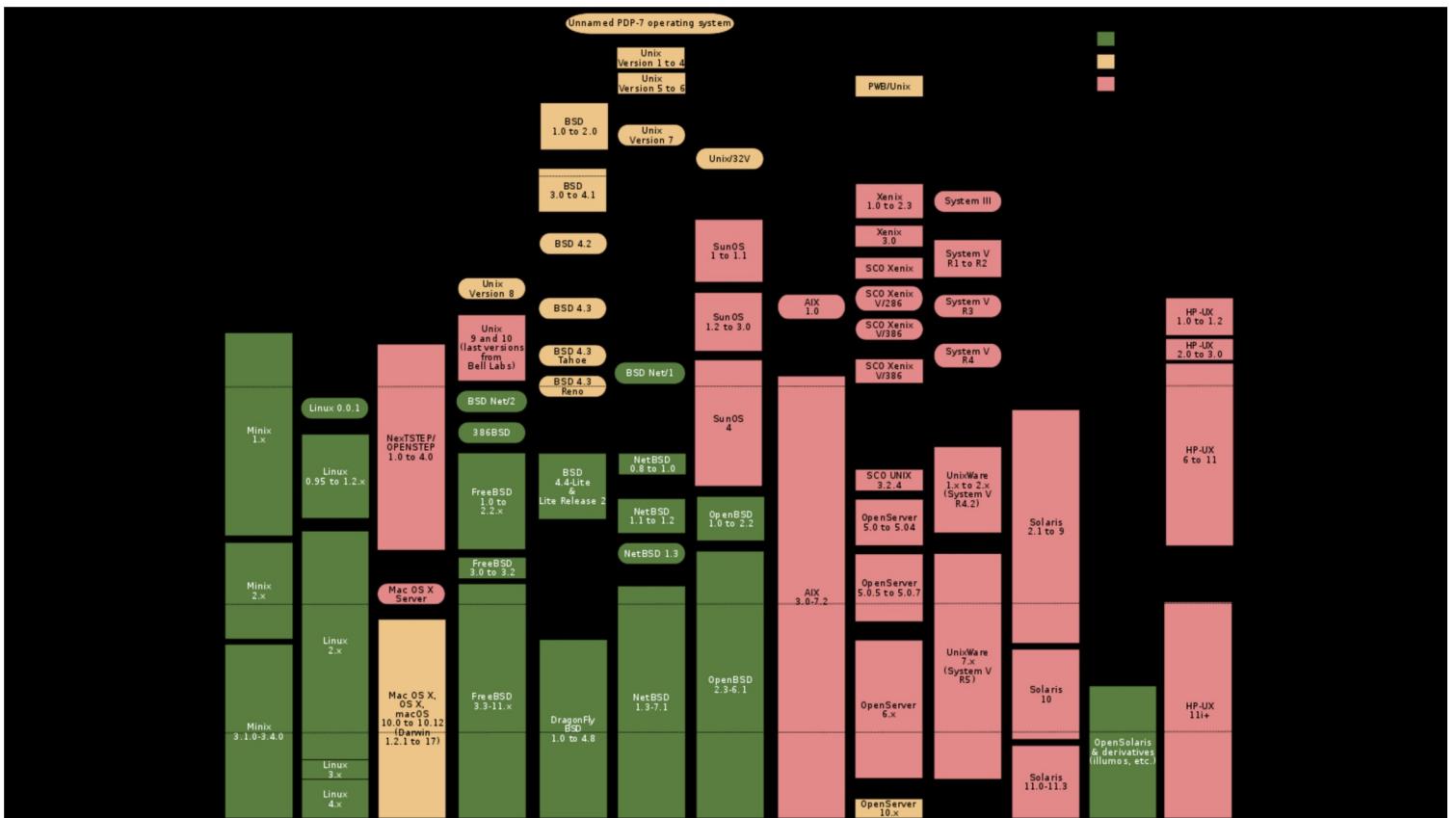
@LEYRER

Plan

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...



Die Linux Kommandozeile beinhaltet UNIX Kommandos, die sich über die letzten 40 !!!! Jahre entwickelt haben. Das “grep” Kommando zum Beispiel existiert seit 1973!!!

Die UNIX Philosophie hinter den Kommandos hat dafür gesorgt, dass die Kommandos so simpel wie möglich sind, genau eine Funktion haben und daher über Pipes miteinander verbunden werden können.

The UNIX philosophy

developed Unix pipelines, software componentry and several Unix tools, such as spell, diff, sort, join, graph, speak, and tr.

His seminal work on software componentization[1] makes him a pioneer of component-based software engineering and software product line engineering.

The UNIX philosophy

Make each program do one thing well. To do a new job, build afresh rather than complicate old programs by adding new "features".

The UNIX philosophy

Expect the output of every program to become the input to another, as yet unknown, program. Don't clutter output with extraneous information. Avoid stringently columnar or binary input formats. Don't insist on interactive input.

Avoid binary input formats => systemd ????

The UNIX philosophy

Use tools in preference to unskilled help to lighten a programming task, even if you have to detour to build the tools and **expect to throw some of them out after you've finished using them.**

The UNIX philosophy

It was later summarized by Peter H. Salus in A Quarter-Century of Unix (1994):[1]

Write programs that do one thing and do it well.
Write programs to work together.
Write programs to handle text streams, because
that is a universal interface.

Es geht also darum, simple, EINFACHE Programme zu erstellen und verwenden, die sich über Textstreams miteinander verbinden lassen.

“simple” programme heißt aber nicht unkomplex

“simpel”

“simpel”

post-list.csv contains list of URLs in my example.

split -l 30 Split by 30 lines

- Use stdin as input for split

- filter Couldn't find a way to easily pipe to stdout from split, hence --filter

jq -R . From the jq manual - Don't parse the input as JSON. Instead, each line of text is passed to the filter as a string

Wo kommen diese Programme denn nun eigentlich alle her ... ?

Single UNIX Specification

The Single UNIX Specification (SUS) is the collective name of a family of standards for computer operating systems, compliance with which is required to qualify for using the "UNIX" trademark.

Product	Vendor	Architecture	UNIX V7	UNIX 03	UNIX 98	UNIX 95	UNIX 93
AIX	IBM Corporation	PowerPC	No	Yes	Yes	No	No
FTX	Cemprus LLC	PA-RISC	No	No	No	No	Yes
EulerOS	Huawei	x86-64	No	Yes	No	No	No
HP-UX	Hewlett-Packard Company	IA-64, PA-RISC	No	Yes	No	Yes	No
IRIX	Silicon Graphics, Inc.	MIPS	No	No	No	Yes	No
K-UX	Inspur	x86-64	No	Yes	No	No	No
macOS	Apple	x86-64	No	Yes	No	No	No
OpenServer	Xinuos	IA-32	No	No	No	No	Yes
Solaris	Oracle Corporation	IA-32, x86-64, SPARC	No	Yes	Yes	No	No
Tru64 UNIX	DEC	Alpha	No	No	Yes	No	No
UnixWare	Xinuos	IA-32	No	No	No	Yes	No
z/OS USS	IBM Corporation	z/Architecture	No	No	No	Yes	No

Very few BSD and Linux-based operating systems are submitted for compliance with the Single UNIX Specification, although system developers generally aim for compliance with POSIX standards, which form the core of the Single UNIX Specification.

2001: Single UNIX Specification version 3,
POSIX:2001

2008: Single UNIX Specification version 4,
POSIX:2008

IEEE Std 1003.1-2008 utilities

161 commandos

part of the Single UNIX Specification (SUS).

These commands can be found on Unix operating systems and most Unix-like operating systems.

POSIX

The Portable Operating System Interface (POSIX)[1] is a family of standards specified by the IEEE Computer Society

IEEE: Institute of Electrical and Electronics Engineers
for maintaining compatibility between operating systems.

The standards emerged from a project that began circa 1985. Richard Stallman

Linux Standard Base (LSB)

- Basiert auf POSIX und der Single UNIX Specification
- The goal of the LSB is to develop and promote a set of open standards that will increase compatibility among Linux distribution ...
- ... few Linux distributions actually go through certification as LSB compliant

LSB commands and utilities

util-linux

util-linux is a standard package distributed by the Linux Kernel Organization for use as part of the Linux operating system. A fork, util-linux-ng—with ng meaning "next generation"—was created when development stalled,[3] but as of January 2011 has been renamed back to util-linux, and is the official version of the package.[4]

GNU Core Utilities commands

The GNU Core Utilities are the basic file, shell and text manipulation utilities of the GNU operating system.

These are the core utilities which are expected to exist on every operating system.

Regeln des Talks

“simpl”

Full text searching Linux man pages with Elasticsearch

Apr 12, 2018 - 16:00 | tutorials

Tags: elasticsearch - linux - man-pages - opensource - tutorial - ruby

In this post we are going to play around with full text searching with Elasticsearch and Linux man pages.

The idea

We will:

1. setup an **Elasticsearch** instance locally

2. create an index for the data

3. feed the index with man pages

4. create a search interface

5. full text search the index

```
search('edit image').each{ |a| puts "#{a[:command]}.ljust(20) - #{a[:description]}"; nil
gimp-2.8          - an image manipulation and paint program.
gimp              - an image manipulation and paint program.
Image::Magick::Q16 - objected-oriented Perl interface to ImageMagick (Q16). Use it to create, edit, co
gimp-console-2.8  - an image manipulation and paint program.
gimp-console      - an image manipulation and paint program.
bitmap            - bitmap editor and converter utilities for the X Window System
bmtoa             - bitmap editor and converter utilities for the X Window System
atobm             - bitmap editor and converter utilities for the X Window System
mailcap.order     - the mailcap ordering specifications
xwd               - dump an image of an X window
```

Install JAVA based search engine um dann mit einem ruby client zuzugreifen.

Seriously?

man -k

```
$ man -k edit image
Image::Grab (3pm)      - Perl extension for Grabbing images off the Internet.
411toppm (1)           - convert Sony Mavica .411 image to ppm
animate (1)             - animates an image or image sequence on any X server.
animate-im6 (1)         - animates an image or image sequence on any X server.
anytopnm (1)            - attempt to convert an unknown type of image file to a portable anymap
atobm (1)               - bitmap editor and converter utilities for the X Window System
bitmap (1)              - bitmap editor and converter utilities for the X Window System
bless (1)               - graphical hexadecimal Gtk# editor
bmp2tiff (1)            - create a TIFF file from a Microsoft Windows Device Independent Bitmap image file
bmtooa (1)              - bitmap editor and converter utilities for the X Window System
btrfs-image (8)          - create/restore an image of the filesystem
btrfs-restore (8)        - try to restore files from a damaged btrfs filesystem image
carousel (6x)            - displays multiple images rotating in a circular formation
cinnamon-menu-editor (1) - Editor for the panel menu
cjpeg (1)                - compress an image file to a JPEG file
compare (1)              - mathematically and visually annotate the difference between an image and its ...
compare-im6 (1)          - mathematically and visually annotate the difference between an image and its ...
composite (1)            - overlaps one image over another.
composite-im6 (1)        - overlaps one image over another.
convert (1)              - convert between image formats as well as resize an image, blur, crop, despeck...
convert_im6 (1)          - convert between image formats as well as resize an image, blur, crop, despeck...
```

apropos

```
$ apropos edit image
Image::Grab (3pm)      - Perl extension for Grabbing images off the Internet.
411toppm (1)           - convert Sony Mavica .411 image to ppm
animate (1)             - animates an image or image sequence on any X server.
animate-im6 (1)         - animates an image or image sequence on any X server.
anytopnm (1)            - attempt to convert an unknown type of image file to a portable anymap
atobm (1)               - bitmap editor and converter utilities for the X Window System
bitmap (1)              - bitmap editor and converter utilities for the X Window System
bless (1)               - graphical hexadecimal Gtk# editor
bmp2tiff (1)            - create a TIFF file from a Microsoft Windows Device Independent Bitmap image file
bmtooa (1)              - bitmap editor and converter utilities for the X Window System
btrfs-image (8)          - create/restore an image of the filesystem
btrfs-restore (8)        - try to restore files from a damaged btrfs filesystem image
carousel (6x)            - displays multiple images rotating in a circular formation
cinnamon-menu-editor (1) - Editor for the panel menu
cjpeg (1)                - compress an image file to a JPEG file
compare (1)              - mathematically and visually annotate the difference between an image and its ...
compare-im6 (1)          - mathematically and visually annotate the difference between an image and its ...
composite (1)            - overlaps one image over another.
composite-im6 (1)        - overlaps one image over another.
convert (1)              - convert between image formats as well as resize an image, blur, crop, despeck...
convert-im6 (1)          - convert between image formats as well as resize an image, blur, crop, despeck...
cpaldjvu (1)              - DjVuDocument encoder for low-color images.
dcfuiareen (1)            - Alternative processing for Fuji RAW images
```

systemd

“simpel”

systemd

Old and tired

New Hotness

```
$ /etc/init.d/apache2 status  
* apache2 is running
```

DIG response header:

Flags:

AA = Authoritative Answer

TC = Truncation

RD = Recursion Desired (set in a query and copied into the response if recursion is supported)

RA = Recursion Available (if set, denotes recursive query support is available)

AD = Authenticated Data (for DNSSEC only; indicates that the data was authenticated)

CD = Checking Disabled (DNSSEC only; disables checking at the receiving server)

```
apache2.service - LSB: Apache2 web server
 Loaded: loaded (/etc/init.d/apache2)
 Active: failed (Result: exit-code) since Wed 2016-03-09 10:32:34 GMT; 9s ago
   Docs: man:systemd-sysv-generator(8)
Process: 3479 ExecStop=/etc/init.d/apache2 stop (code=exited, status=0/SUCCESS)
Process: 3503 ExecStart=/etc/init.d/apache2 start (code=exited, status=1/FAILURE)

Mar 09 10:32:34 Ubuntu14 apache2[3503]: *
Mar 09 10:32:34 Ubuntu14 apache2[3503]: * The apache2 configtest failed.
Mar 09 10:32:34 Ubuntu14 apache2[3503]: Output of config test was:
Mar 09 10:32:34 Ubuntu14 apache2[3503]: apache2: Syntax error on line 224 of...
Mar 09 10:32:34 Ubuntu14 apache2[3503]: Action 'configtest' failed.
Mar 09 10:32:34 Ubuntu14 apache2[3503]: The Apache error log may have more i....
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Control process exite...=1
Mar 09 10:32:34 Ubuntu14 systemd[1]: Failed to start LSB: Apache2 web server.
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Unit entered failed state.
Mar 09 10:32:34 Ubuntu14 systemd[1]: apache2.service: Failed with result 'e...'.
Hint: Some lines were ellipsized, use -l to show in full.
```

DIG response header:

Flags:

AA = Authoritative Answer

TC = Truncation

RD = Recursion Desired (set in a query and copied into the response if recursion is supported)

RA = Recursion Available (if set, denotes recursive query support is available)

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journalctl

systemd journal: centralize the management of logs

The journald daemon collects data from all available sources and stores them in a binary format for easy and dynamic manipulation.

=> div. ausgabeformate (json, ...) unterschiedliche zeitzonen,

```
leyrer@eh18demo:~% journalctl -u apache2.service
-- Logs begin at Sam 2018-03-31 12:24:35 CEST, end at Sam 2018-03-31 20:16:36 CEST.
--
Mär 31 12:25:02 Betty systemd[1]: Starting LSB: Apache2 web server...
Mär 31 12:25:02 Betty apache2[1256]: * Starting Apache httpd web server apache2
Mär 31 12:25:04 Betty apache2[1256]: AH00558: apache2: Could not reliably determine
the server's fully qualified domain name
Mär 31 12:25:05 Betty apache2[1256]: *
Mär 31 12:25:05 Betty systemd[1]: Started LSB: Apache2 web server.
```

DIG response header:

Flags:

AA = Authoritative Answer

TC = Truncation

RD = Recursion Desired (set in a query and copied
into the response if recursion is supported)

RA = Recursion Available (if set, denotes recursive
query support is available)

AD = Authenticated Data (for DNSSEC only;
indicates that the data was authenticated)

CD = Checking Disabled (DNSSEC only; disables
checking at the receiving server)

nslookup / dig

“simpel”

```
$ dig www.luga.de

; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59144
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.luga.de.      IN  A

;; ANSWER SECTION:
www.luga.de.  17643  IN  A  213.179.141.18

;; Query time: 2 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Fri Apr 20 13:49:17 CEST 2018
;; MSG SIZE  rcvd: 56
```

```
; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
```

Command options

```
; ; Got answer:  
; ; ->>HEADER<<- opcode: QUERY, status: NOERROR,  
id: 59144  
; ; flags: qr rd ra; QUERY: 1, ANSWER: 1,  
AUTHORITY: 0, ADDITIONAL: 1
```

DIG response header:

Flags:

AA = Authoritative Answer

TC = Truncation

RD = Recursion Desired (set in a query and copied into the response if recursion is supported)

RA = Recursion Available (if set, denotes recursive query support is available)

AD = Authenticated Data (for DNSSEC only; indicates that the data was authenticated)

CD = Checking Disabled (DNSSEC only; disables checking at the receiving server)

```
; ; QUESTION SECTION:  
;www.luga.de.      IN A  
  
; ; ANSWER SECTION:  
www.luga.de.    17643  IN A 213.179.141.18
```

This section of the output contains the actual results we were looking for. It restates the query and then returns the matching DNS records for that domain name.

Here, we can see that there are four "A" records for "duckduckgo.com". By default, "A" records are returned. This gives us the IP addresses that the domain name resolves to.

The "99" is the TTL (time to live) before the DNS server rechecks the association between the domain name and the IP address. The "IN" means the class of the record is a standard internet class.

```
; ; Query time: 2 msec
; ; SERVER: 127.0.1.1#53(127.0.1.1)
; ; WHEN: Fri Apr 20 13:49:17 CEST 2018
; ; MSG SIZE  rcvd: 56
```

These lines simply provide some statistics about the actual query results. The query time can be indicative of problems with the DNS servers.

```
$ dig www.luga.de

; <>> DiG 9.10.3-P4-Ubuntu <>> www.luga.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59144
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.luga.de.      IN  A

;; ANSWER SECTION:
www.luga.de.  17643  IN  A  213.179.141.18

;; Query time: 2 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Fri Apr 20 13:49:17 CEST 2018
;; MSG SIZE  rcvd: 56
```

```
$ dig +short www.luga.de  
213.179.141.18
```

KURZ

Woran erkennt man Microsoft Admins?

Nslookup und dig aufruf.vergleiche

```
$ nslookup www.luga.de  
Server: 127.0.1.1  
Address: 127.0.1.1#53
```

```
Non-authoritative answer:  
Name: www.luga.de  
Address: 213.179.141.18
```

```
$ dig www.luga.de  
;; ANSWER SECTION:  
www.luga.de.    17374  IN  A  213.179.141.18
```

```
$ nslookup -q=mx luga.de
Server: 127.0.1.1
Address: 127.0.1.1#53

Non-authoritative answer:
luga.de mail exchanger = 100 mail.luga.de.
```

MX record

```
$ dig luga.de MX  
;; ANSWER SECTION:  
luga.de. 21562 IN MX 100 mail.luga.de.
```

tracepath

Ähnlich traceroute -U (use UDP), das braucht auch keine root rechte

maximum transmission unit (MTU)

Path MTU Discovery (PMTUD) is a standardized technique in computer networking for determining the maximum transmission unit (MTU) size on the network path between two Internet Protocol (IP) hosts, usually with the goal of avoiding IP fragmentation.

Since traceroute now has an --mtu option and can be run as an ordinary user, I don't even bother to install tracepath on my machines.

```
$ tracepath -b www.luga.de
1?: [LOCALHOST]                                pmtu 1500
1: 192.168.32.1 (192.168.32.1)                3.304ms
1: 192.168.32.1 (192.168.32.1)                62.963ms
1: 192.168.32.1 (192.168.32.1)                1.560ms
1: 192.168.32.1 (192.168.32.1)                60.322ms
2: 172.19.5.1 (172.19.5.1)                     1.702ms
3: 10.241.145.0 (10.241.145.0)                46.188ms
4: 213.208.157.126 (213.208.157.126)         44.827ms
5: 217.175.203.34 (217.175.203.34)           115.700ms
6: ae35.r17.esh.vie.nextlayer.at (81.16.149.253) 64.974ms
7: no reply
8: 92.60.1.231 (92.60.1.231)                  50.190ms asymm 7
9: ae13.r06.inx.fra.de.nextlayer.net (92.60.2.127) 49.529ms asymm 7
10: rt-decix-2.m-online.net (80.81.192.7)        70.008ms asymm 8
11: te2-0-0.ac3.muc7.m-online.net (212.18.7.23)   76.712ms pmtu 1492
11: host-212-114-222-188.customer.m-online.net (212.114.222.188) 68.425ms
asymm 10
12: host-212-114-222-188.customer.m-online.net (212.114.222.188) 68.777ms
asymm 10
13: www.luga.de (213.179.141.18)                179.315ms reached
Resume: pmtu 1492 hops 13 back 11
```

As rule it contains value of RTT. Additionally, it can show Path MTU, when it changes. If the path is asymmetric or the probe finishes before it reach prescribed hop, difference between number of hops in forward and backward direction is shown following keyword `async`. This information is not reliable. F.e. the third line shows asymmetry of 1, it is because the first probe with TTL of 2 was rejected at the first hop due to Path MTU Discovery.

The last line summarizes information about all the path to the destination, it shows detected Path MTU, amount of hops to the destination and our guess about amount of hops from the destination to us, which can be different when the path is asymmetric.

Since traceroute now has an `--mtu` option and can be run as an ordinary user, I don't even bother to install tracepath on my machines

mtr - My Traceroute

mtr combines the functionality of the traceroute and ping programs in a single network diagnostic tool.

As mtr starts, it investigates the network connection between the host mtr runs on and HOSTNAME. by sending packets with purposely low TTLs. It continues to send packets with low TTL, noting the response time of the intervening routers. This allows mtr to print the response percentage and response times of the internet route to HOSTNAME. A sudden increase in packet loss or response time is often an indication of a bad (or simply overloaded) link.

DEMO TIME

```
$ mtr --report www.luga.de
Start: Fri Apr 20 13:59:02 2018
HOST: Betty
      Loss%   Snt   Last    Avg   Best  Wrst StDev
1.|-- 192.168.32.1        0.0%   10     2.5    7.7   2.5  23.0   6.2
2.|-- 172.19.5.1         0.0%   10   199.5   64.2   1.4 366.3 122.3
3.|-- 10.241.145.0       90.0%   10    38.5   38.5   38.5  38.5   0.0
4.|-- 10.241.145.0       90.0%   10    87.9   87.9   87.9  87.9   0.0
5.|-- 10.241.145.0       90.0%   10   113.1  113.1  113.1 113.1   0.0
6.|-- 10.241.145.0       90.0%   10   264.1  264.1  264.1 264.1   0.0
7.|-- 10.241.145.0       80.0%   10   509.9  340.5  171.2 509.9 239.5
8.|-- 10.241.145.0       80.0%   10   114.5  108.0  101.6 114.5   9.1
9.|-- 10.241.145.0       80.0%   10    55.0   70.9   55.0  86.8  22.5
10.|-- 10.241.145.0      50.0%   10    71.6   99.9  44.7 233.6  75.9
11.|-- ???            100.0   10     0.0    0.0   0.0   0.0   0.0
12.|-- ???            100.0   10     0.0    0.0   0.0   0.0   0.0
13.|-- 10.241.145.0       90.0%   10    77.8   77.8   77.8  77.8   0.0
14.|-- ???            100.0   10     0.0    0.0   0.0   0.0   0.0
```

iproute2 (ip)

Ifconfig Does not support nor use CIDR Classless Inter-Domain Routing notation

ifconfig still operates with the old-fashioned netmasks (for IPv4).

functionally organized on two layers of Networking Stack i.e. Layer 2 (Link Layer), Layer 3 (IP Layer) and does the work of all the above mentioned commands from net-tools package.

Net-tools 1.60 (ifconfig, ...): 2011-10-14

While ifconfig mostly displays or modifies the interfaces of a system, this command is capable of doing following tasks:

Displaying or Modifying Interface properties.

Adding, Removing ARP Cache entries along creating new Static ARP entry for a host.

Displaying MAC addresses associated with all the interfaces.

Displaying and modifying kernel routing tables.

Geräte und Konfiguration

Old and tired

New Hotness

Geräte und Konfiguration

```
$ ip addr show
...
3: wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc mq
state UP group default qlen 1000
    link/ether a4:4e:31:95:9f:58 brd ff:ff:ff:ff:ff:ff
        inet 172.18.251.101/16 brd 172.18.255.255 scope global wlan0
            valid_lft forever preferred_lft forever
        inet6 fe80::a64e:31ff:fe95:9f58/64 scope link
            valid_lft forever preferred_lft forever
```

```
$ ip link show
...
3: wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc mq
state UP mode DORMANT group default qlen 1000
    link/ether a4:4e:31:95:58:ff brd ff:ff:ff:ff:ff:ff
```

NIC up/down

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

IP Adresse setzen

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

IP Adresse löschen

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

ARP Eintrag hinzufügen

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

Route anzeigen

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

Route hinzufügen

Old and tired

New Hotness

Diese Themen bzw. Tools versuche ich zu behandeln. Auch hier gilt wieder:

falls Euch das nicht interessiert bin ich Euch nicht böse, wenn Ihr in einen anderen Talk oder Netzwerken geht,

Also, nach dieser Warnung, in medias res ...

Mehr route2 Magie

Ifconfig Does not support nor use CIDR notation
ifconfig still operates with the old-fashioned netmasks
(for IPv4).

Although this command might seem a bit complex at first site but it is much broader in functionality than ifconfig. It is functionally organized on two layers of Networking Stack i.e. Layer 2 (Link Layer), Layer 3 (IP Layer) and does the work of all the above mentioned commands from net-tools package.

While ifconfig mostly displays or modifies the interfaces of a system, this command is capable of doing following tasks:

- Displaying or Modifying Interface properties.
- Adding, Removing ARP Cache entries along creating new Static ARP entry for a host.
- Displaying MAC addresses associated with all the interfaces.
- Displaying and modifying kernel routing tables.

tmux

“simpel”

DEMO TIME

mother

tail

15:41:13 ~

\$

```

1 [|||]      ] 5 [|||]
2 [|||]      ] 6 [|||]
3 [|||]      ] 7 [|||]
4 [|||]      ] 8 [|||]
Mem[|||||]6653 Tasks: 214, 1022 thr; 1 running
Swp[          Load average: 0.81 0.63
Uptime: 04:12:11

PID USER PRI NI VIRT RES SHR S CPU% MEM% TIME+ Comm
4010 at007489 20 0 917M 198M 32708 S 13.3 0.8 3:46.34 /usr
4196 at007489 20 0 1966M 252M 96788 S 5.1 1.1 10:31.27 comp
5218 at007489 20 0 32896 5080 2992 R 4.4 0.0 0:01.08 htop
4246 at007489 20 0 1326M 281M 39340 S 3.2 1.2 1:03.35 /usr
1928          20 0 789M 240M 206M S 2.5 1.0 11:33.06 /usr
4029 at007489 20 0 917M 198M 32708 S 2.5 0.8 1:03.00 /usr

```

F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice -F8Nice +F9K

^C

15:41:22 ➜ x ➜ -

\$ tail -F /var/log/syslog

```

Mar 29 15:38:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:38:48 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:39:12 mother wpa_supplicant[4758]: wlan0: CTRL-EVENT-SCAN-STARTED
Mar 29 15:39:18 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:39:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:39:19 mother acvpnagent[2770]: Function: tableCallbackHandler File: RouteMgr.cpp Line: 1723 Invoked Function: recv Return Code
11 (0x0000000B) Description: unknown
Mar 29 15:39:48 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C
Mar 29 15:40:48 mother hddtemp[2441]: message repeated 2 times: [ /dev/sdb: ST9500420AS: 35 C]
Mar 29 15:41:12 mother wpa_supplicant[4758]: wlan0: CTRL-EVENT-SCAN-STARTED
Mar 29 15:41:18 mother hddtemp[2441]: /dev/sdb: ST9500420AS: 35 C

```

zsh

Der Name zsh leitet sich von Zhong Shao, Professor an der Yale University, ab, der damals Assistent an der Princeton University war. Paul Falstad dachte, dass Shaos Login-Name „zsh“ ein guter Name für eine Shell sei.

angesehen, welche viele Verbesserungen und Eigenschaften von bash, ksh und tcsh vereint.

Verzeichniswechsle ohne CD !!!!!

oh-my-zsh

DEMO TIME

A screenshot of a macOS terminal window. The window title bar shows "caiogondim@caiogondim: ~ (zsh)". The status bar at the bottom of the window shows "01:24:03" and a blue arrow icon. The main terminal area displays the following text:

```
Last login: Wed Jan 14 01:21:50 on ttys001  
$ j
```

1. nate@adot: ~ (zsh)
23:26:36 ➜ cd ~

oh-my-zsh Plugins

HTTPie

Der Name zsh leitet sich von Zhong Shao, Professor an der Yale University, ab, der damals Assistent an der Princeton University war. Paul Falstad dachte, dass Shaos Login-Name „zsh“ ein guter Name für eine Shell sei.

angesehen, welche viele Verbesserungen und Eigenschaften von bash, ksh und tcsh vereint.

Verzeichniswechsle ohne CD !!!!!

```
$ http --verify=no https://www.Luga.de/
/usr/lib/python2.7/dist-packages/urllib3/connectionpool.py:794: InsecureRequestWarning: Unverified HTTPS request
  InsecureRequestWarning)
HTTP/1.1 200 OK
Accept-Ranges: bytes
Cache-Control: max-age=3600
Connection: Keep-Alive
Content-Encoding: gzip
Content-Length: 1501
Content-Type: text/html
Date: Fri, 20 Apr 2018 13:11:37 GMT
ETag: "e20-5683cac52fe80-gzip"
Expires: Fri, 20 Apr 2018 14:11:37 GMT
Keep-Alive: timeout=5, max=100
Last-Modified: Sun, 25 Mar 2018 13:31:22 GMT
Server: Apache/2.4.25 (Debian)
Vary: Accept-Encoding

<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1.0"/>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<link rel="stylesheet" type="text/css" href="/css/luga.css">
<script type="text/javascript" src="/js/luga.js"></script>
<title>LUGA e.V.</title>
</head>
<body>
<div id="main" style="">
    <div class="header">
        
        
    </div>
    <hr>
    <div class="menu">
Start
| Wir über uns
| Treffen
| Angebote

```

HTTPie & JSON

Der Name zsh leitet sich von Zhong Shao, Professor an der Yale University, ab, der damals Assistent an der Princeton University war. Paul Falstad dachte, dass Shaos Login-Name „zsh“ ein guter Name für eine Shell sei.

angesehen, welche viele Verbesserungen und Eigenschaften von bash, ksh und tcsh vereint.

Verzeichniswechsle ohne CD !!!!!

aria2

Download-Manager/-Beschleuniger für unixoide Betriebssysteme wie Linux oder BSD.

Das Programm ist mehrsprachig und verwendet GTK+ zur Darstellung der grafischen Benutzeroberfläche. Es unterstützt die Protokolle HTTP, HTTPS, FTP und SFTP. Die aktuelle Weiterentwicklung Aria2 unterstützt auch BitTorrent und Metalinks.

Weitere Funktionen sind Pausieren und Fortsetzen sowie gleichzeitiges Herunterladen und Segmentieren des Transfervorgangs zum Zweck der Beschleunigung.

Die Entwicklung des ursprünglichen Aria wurde im Dezember 2002 eingestellt. Seit dem 17. Februar 2006 wird die Anwendung unter der Bezeichnung aria2 als textbasierte Konsolenanwendung weiterentwickelt.

```
$ aria2c -c -j 2 -x 10  
https://archive.org/download/upd-gold/UPD%20Gold  
%20%281995%29%28Weird%20Science%29%28Disc  
%201%20of%204%29%5B%21%5D.iso
```

-c continue download after abort (don't clobber)

-j number of parallel downloads

-x max connections per server

ripgrep

It can replace many use cases served by both The Silver Searcher and GNU grep because it is generally faster than both.

Like The Silver Searcher, ripgrep defaults to recursive directory search and won't search files ignored by your .gitignore files. It also ignores hidden and binary files by default.

ripgrep supports many features found in grep, such as showing the context of search results, searching multiple patterns, highlighting matches with color and full Unicode support.

ripgrep supports searching files compressed in a common format (gzip, xz, lzma or bzip2 current) with the -z/--search-zip flag.

ripgrep doesn't have multiline search.

ripgrep uses a regex engine based on finite automata, so if you want fancy regex features such as backreferences or lookaround, ripgrep won't provide them to you.

Tool	Command	Line count	Time
ripgrep (Unicode)	rg -n -w '[A-Z]+_SUSPEND'	450	0.106s
git grep	LC_ALL=C git grep -E -n -w '[A-Z]+_SUSPEND'	450	0.553s
The Silver Searcher	ag -w '[A-Z]+_SUSPEND'	450	0.589s
git grep (Unicode)	LC_ALL=en_US.UTF-8 git grep -E -n -w '[A-Z]+_SUSPEND'	450	2.266s
sift	sift --git -n -w '[A-Z]+_SUSPEND'	450	3.505s
ack	ack -w '[A-Z]+_SUSPEND'	1878	6.823s
The Platinum Searcher	pt -w -e '[A-Z]+_SUSPEND'	450	14.208s

This example searches the entire Linux kernel source tree (after running `make defconfig && make -j8`) for `[A-Z]+_SUSPEND`

`-n, --line-number`

Show line numbers (1-based). This is enabled by default when searching in a terminal.

`-w, --word-regexp`

Only show matches surrounded by word boundaries. This is roughly equivalent to putting `\b` before and after all of the search patterns.

exa

It can replace many use cases served by both The Silver Searcher and GNU grep because it is generally faster than both.

Like The Silver Searcher, ripgrep defaults to recursive directory search and won't search files ignored by your .gitignore files. It also ignores hidden and binary files by default.

ripgrep supports many features found in grep, such as showing the context of search results, searching multiple patterns, highlighting matches with color and full Unicode support.

ripgrep supports searching files compressed in a common format (gzip, xz, lzma or bzip2 current) with the -z/--search-zip flag.

ripgrep doesn't have multiline search.

ripgrep uses a regex engine based on finite automata, so if you want fancy regex features such as backreferences or lookaround, ripgrep won't provide them to you.

```
[ben ~/C/e/exa:master]
$ exa
Cargo.lock LICENCE README.md generate-testcases.sh src
Cargo.toml Makefile contrib screenshot.png target

[ben ~/C/e/exa:master]
$ exa -l
.rw-r--r-- 11k ben 18 Nov 18:28 Cargo.lock
.rw-r--r-- 549 ben 15 Nov 18:38 Cargo.toml
.rw-r--r-- 1.1k ben 23 Nov 2014 LICENCE
.rw-r--r-- 775 ben 2 Aug 15:28 Makefile
.rw-r--r-- 2.7k ben 19 Nov 13:18 README.md
drwxr-xr-x - ben 7 Jun 16:45 contrib
.rwrxr-xr-x 3.1k ben 3 Sep 13:26 generate-testcases.sh
.rw-r--r-- 382k ben 8 Jun 21:00 screenshot.png
drwxr-xr-x - ben 18 Nov 18:55 src
drwxr-xr-x - ben 3 Nov 0:48 target

[ben ~/C/e/exa:master]
$ exa -abghHls
  inode Permissions Links Size Blocks User Group Date Modified Name
30030336 .rw-r--r-- 1 6.0Ki 16 ben staff 23 Nov 0:31 .DS_Store
1971258 drwxr-xr-x 15 - - ben staff 19 Nov 13:21 .git
30048390 .rw-r--r-- 1 20 8 ben staff 2 Nov 20:45 .gitignore
30163566 .rw-r--r-- 1 200 8 ben staff 4 Nov 16:55 .travis.yml
31959543 .rw-r--r-- 1 11Ki 24 ben staff 18 Nov 18:28 Cargo.lock
31959544 .rw-r--r-- 1 549 8 ben staff 15 Nov 18:38 Cargo.toml
1971322 .rw-r--r-- 1 1.1Ki 8 ben staff 23 Nov 2014 LICENCE
23377412 .rw-r--r-- 1 775 8 ben staff 2 Aug 15:28 Makefile
30163567 .rw-r--r-- 1 2.6Ki 8 ben staff 19 Nov 13:18 README.md
12375448 drwxr-xr-x 4 - - ben staff 7 Jun 16:45 contrib
24377288 .rw-r--r-- 1 3.1Ki 8 ben staff 3 Sep 13:26 generate-testcases.sh
20087308 .rw-r--r-- 1 373Ki 752 ben staff 8 Jun 21:00 screenshot.png
1971325 drwxr-xr-x 11 - - ben staff 18 Nov 18:55 src
30083756 drwxr-xr-x 3 - - ben staff 3 Nov 0:48 target

[ben ~/C/e/exa:master]
$
```

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fzf

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ripgrep supports searching files compressed in a common format (gzip, xz, lzma or bzip2 current) with the -z/--search-zip flag.

ripgrep doesn't have multiline search.

ripgrep uses a regex engine based on finite automata, so if you want fancy regex features such as backreferences or lookaround, ripgrep won't provide them to you.

DEMO TIME

```
src/util/eventbox_test.go
src/curses/curses_test.go
src/util/atomicbool.go
src/util/util_test.go
src/tokenizer_test.go
src/chunklist_test.go
src/algo/algo_test.go
src/util/eventbox.go
src/curses/curses.go
src/pattern_test.go
src/options_test.go
src/history_test.go
src/reader_test.go
src/merger_test.go
src/cache_test.go
src/util/util.go
src/tokenizer.go
src/item_test.go
src/constants.go
src/chunklist.go
src/ansi_test.go
src/algo/algo.go
src/terminal.go
src/fzf/main.go
src/pattern.go
> src/options.go
src/matcher.go
src/history.go
src/reader.go
src/merger.go
src/cache.go
src/item.go
src/core.go
src/ansi.go
35/63
> .go$
```

```
package fzf

import (
    "fmt"
    "os"
    "regexp"
    "strconv"
    "strings"
    "unicode/utf8"

    "github.com/junegunn/fzf/src/curses"
    "github.com/junegunn/go-shellwords"
)

const usage = `usage: fzf [options]

Search
  -x, --extended      Extended-search mode
                      (enabled by default; +x or --no-extended to disable)
  -e, --exact          Enable Exact-match
  -i                  Case-insensitive match (default: smart-case match)
  +i                  Case-sensitive match
  -n, --nth=N[...]     Comma-separated list of field index expressions
                      for limiting search scope. Each can be a non-zero
                      integer or a range expression ([BEGIN]..[END]).
  --with-nth=N[...]    Transform the presentation of each line using
                      field index expressions
  -d, --delimiter=STR Field delimiter regex (default: AWK-style)
  +s, --no-sort         Do not sort the result
  --tac                Reverse the order of the input
  --tiebreak=CRI[...]  Comma-separated list of sort criteria to apply
                      when the scores are tied [length|begin|end|index]
                      (default: length)
```

icdiff

It can replace many use cases served by both The Silver Searcher and GNU grep because it is generally faster than both.

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ripgrep supports many features found in grep, such as showing the context of search results, searching multiple patterns, highlighting matches with color and full Unicode support.

ripgrep supports searching files compressed in a common format (gzip, xz, lzma or bzip2 current) with the -z/--search-zip flag.

ripgrep doesn't have multiline search.

ripgrep uses a regex engine based on finite automata, so if you want fancy regex features such as backreferences or lookaround, ripgrep won't provide them to you.

The image shows two side-by-side terminal windows. Both windows have a title bar 'Terminal — bash — 48x14' and a dark background.

The left terminal window displays the command:

```
~ $ diff button-{a,b}.css
```

and the resulting diff output:

```
2c2
<   width: 350px;
---
>   width: 400px;
4,6c4,6
<   margin: 0px;
<   padding: 0px;
<   margin-bottom: 15px;
---
>   font-size: 30px;
>   margin: 0;
>   padding: 0;
~ $
```

The right terminal window displays the command:

```
~ $ icdiff button-{a,b}.css
```

and the resulting diff output:

```
button-a.css          button-b.css
#input, #button {      #input, #button {
    width: 350px;      width: 400px;
    height: 40px;      height: 40px;
    margin: 0px;        font-size: 30px;
    padding: 0px;        margin: 0;
    margin-bottom: 15px; padding: 0;
    text-align: center; text-align: center;
}
~ $
```

progress - Coreutils Progress Viewer

It simply scans /proc for interesting commands, and then looks at proc directories fd and fdinfo to find opened files and seek positions, and reports status for the largest file.

It's very light, and compatible with virtually any command.

```
% dd if=/dev/urandom bs=1M count=500 | pv -petra -s 500m | dd of=/dev/null
500+0 records in/s] [ 150MiB/s] [=====>      ] 90% ETA
0:00:00
500+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 3,33126 s, 157 MB/s
0:00:03 [ 150MiB/s] [ 150MiB/s] [=====>      ] 100%
1024000+0 records in
1024000+0 records out
524288000 bytes (524 MB, 500 MiB) copied, 3,33104 s, 157 MB/s
```

MX record

```
□ progress ▶ 1 > cp ▶ 2 ~/Projekte/eh18 < 10:22 < Fre 30 Mär * 96% < CPU 5.74%
10:21:29 ➜ x ➜ ~/Projekte/eh18 ➜ Every 2,0s: progress -q Fri Mar 30 10:22:21 2018
$ cp -a ~/* /media/ [REDACTED]/MoreData/temp [12262] cp /home/at007489/Android/Sdk/system-images/android-25/google_apis/x86/system.img
81.3% (1.6 GiB / 2 GiB)
```

Fragen, Anregungen, weitere Tools?



17. Linux-Infotag

Samstag, 21. April 2018

9:30 Uhr bis 17:00 Uhr
Hochschule Augsburg

luga
Linux user group
Augsburg e.V.

Hochschule
Augsburg University of
Applied Sciences