

Mit `curl` auf Fehlersuche

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- seit 30 Jahren was mit Computern
 - Amiga, OS/2, OS/400, Linux
 - Beruflich auch Windows
- Linux / FOSS seit 1994/1995
 - Linux Kernel < 1.0
 - Slackware
- mag `vi`, `vim`, `neovim`
- Was ist `nano`?



Wenn ein Prozess Excel enthält, ist der Prozess kaputt.

Danke

- Orga Team und Helfern FrOSCon
- Familie
- Tobi von <https://toheine.net> für das `asciinema` Skript

Warum dieser Vortrag?

- Troubleshooting in
 - Bare Metal
 - Virtuellen Maschinen
 - Containern (Podman, Docker, Kubernetes usw.)
- `telnet` seit Jahren nicht mehr Standard (und das ist gut so)
- `netcat` wird von IDS, IPS und SIEM protokolliert oder geblockt

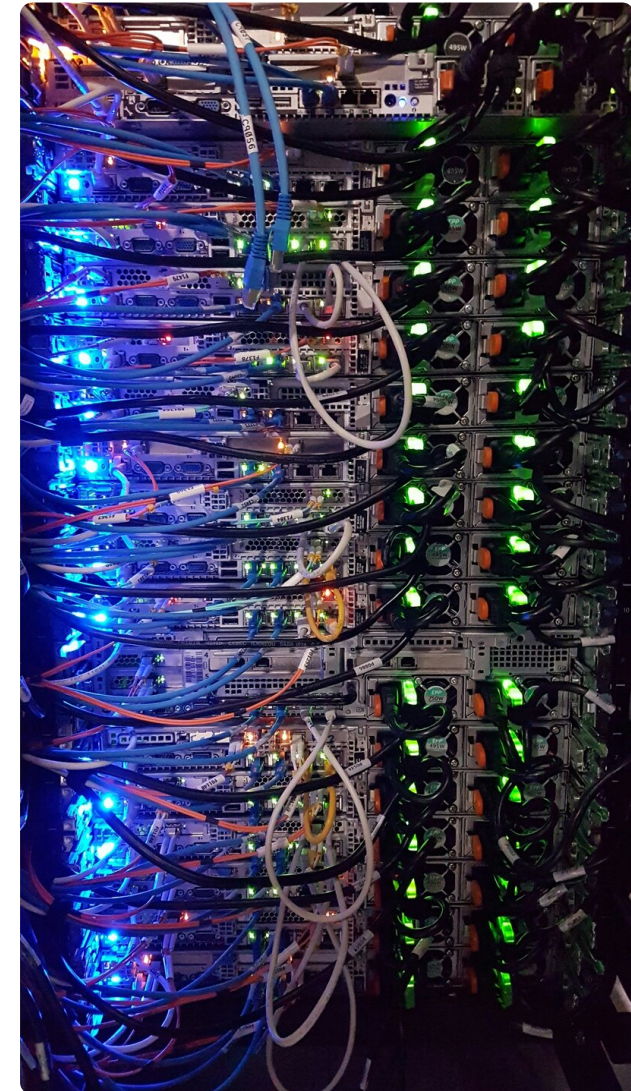


Photo [1]: Massimo Botturi

#curl

Lösung

- Nachinstallieren?
 - Container?
 - Systeme ohne Internet
- Ist der Port offen
 - SMTP
 - IMAP
 - POP3

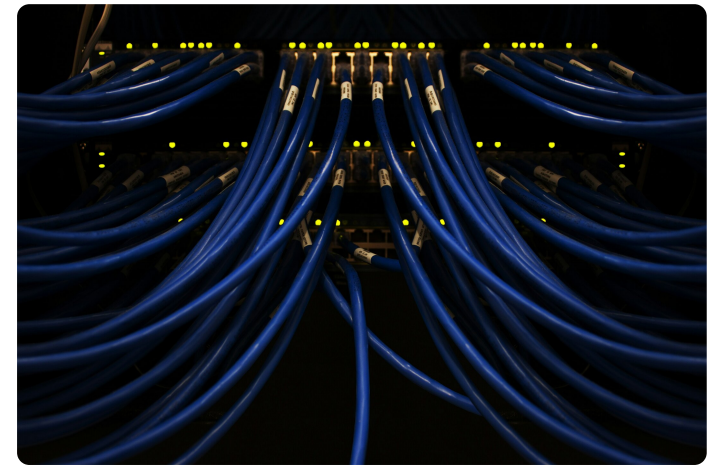


Photo [2]: Scott Rodgerson

Historisch war `telnet` die Lösung

Port offen

```
telnet example.com 80
Trying 104.18.26.120...
Connected to example.com.
Escape character is '^['.
```

`^]` entspricht dabei `Ctrl + ]`

Port geschlossen

```
telnet example.com 81
Trying 104.18.27.120...
telnet: connect to address 104.18.27.120: Connection timed out
```

SMTP / HTTP

```

1 telnet 127.0.0.1 25
2 Trying 127.0.0.1...
3 Connected to 127.0.0.1.
4 Escape character is '^]'.
5 220 8350e8d948d9 ESMTP Postfix (Debian)
6 ehlo example.org
7 mail from: stoeps@example.org
8 250 2.1.0 Ok
9 rcpt to: stoeps@stoeps.de
10 250 2.1.5 Ok
11 data
12 354 End data with <CR><LF>.<CR><LF>
13 subject: Test
14 Some text.
15 .
16 250 2.0.0 Ok: queued as E9C1D4575AE2

```

```

1 telnet google.com 80
2 Trying 172.217.168.78...
3 Connected to google.com.
4 Escape character is '^]'.
5 GET /index.html
6 HTTP/1.0 200 OK
7 Date: Sat, 28 Feb 2026 15:06:22 GMT
8 Expires: -1
9 Cache-Control: private, max-age=0
10 Content-Type: text/html; charset=ISO-8859-1

```



Aber `curl` kann viel mehr

Protokolle

Proxies

Auth

`curl` im Auto oder der Playstation

Autohersteller die `curl` benutzen

Daniel Stenberg

Acura	Alfa Romeo	Audi	Baojun	Bentley	BMW
Buick	BYD	Cadillac	Chevrolet	Chrysler	Citroen
Dacia	Dodge	DS	Ford	GMC	Holden
Honda	Hyundai	Infiniti	Jeep	Kia	Lamborghini
Lexus	Lincoln	Mazda	Mercedes	Mini	Nissan
Opel	Peugeot	Polestar	Porsche	RAM	Renault
Rolls Royce	Seat	Skoda	Smart	Subaru	Suzuki
Tesla	Toyota	Vauxhall	Volkswagen	Volvo	

car brands using curl

Autohersteller die `curl` unterstützen



Daniel Stenberg

car brands sponsoring or paying for curl support

@stoeps@infosec.exchange

Photos [4] Daniel Stenberg

#FOSCON

#curl

Curl Projekt sucht Windows Entwickler

curl kann auch telnet

```
curl telnet://192.168.5.1:443 -v
* Trying 192.168.5.1:443...
* Established connection to 192.168.5.1 (192.168.5.1 port 443)
  from 192.168.11.82 port 37350
```

- Zum Prüfen ob Port offen → OK

```
curl telnet://192.168.11.1
```

- Der Podcast erlaubt Feedback über `telnet` oder Fax
 - Getestet und funktioniert





Ein paar Non-HTTP Beispiele

SMTP mit curl

```
curl --url "smtp://smtp.example.com:587" \  
  --ssl-reqd \  
  --mail-from "john.doe@example.com" \  
  --mail-rcpt "musterfrau@example.com" \  
  --upload-file "email" \  
  --insecure -n
```

From: John Doe <John.Doe@example.com>
To: musterfrau@example.com
Subject: Testing SMTP Mails with curl

Hi,
just wanted to test.

Gallia est omnis divisa in partes tres, quarum.

POP3 / IMAP mit curl

```
curl pop3(s)://example.com  
curl imap(s)://example.com
```

- Check Inbox

```
curl imaps://imap.example.com/ -X 'STATUS INBOX (MESSAGES)' -n  
* STATUS "INBOX" (MESSAGES 1)
```

- Lesen der 1. Mail

```
curl 'imaps://imap.example.com/INBOX;MAILINDEX=1' -n
```

IMAP mehr Details

- Ordner-Liste

```
imap://user:password@mail.example.com
```

- Ordner-Liste in der INBOX

```
imap://user:password@mail.example.com/INBOX
```

- INBOX auswählen und Nachricht mit UID=1 anzeigen

```
imap://user:password@mail.example.com/INBOX/;UID=1
```

- INBOX auswählen und die erste Nachricht anzeigen

```
imap://user:password@mail.example.com/INBOX/;MAILINDEX=1
```

IMAP mehr Details (2)

- Zeige den Textteil der 3. Nachricht in der INBOX

```
imap://user:password@mail.example.com/INBOX/;UID=3/;SECTION=TEXT
```

- Zeige die ersten 1024 Octets der 4. Nachricht in INBOX

```
imap://user:password@mail.example.com/INBOX/;UID=4/;PARTIAL=0.1024
```

- Prüfe auf neue Nachrichten in der Inbox

```
imap://user:password@mail.example.com/INBOX?NEW
```

- Suche `shadows` im Subject in INBOX Nachrichten

```
imap://user:password@mail.example.com/INBOX?SUBJECT%20shadows
```

LDAP Query mit curl

```
curl -n '\
ldap://cnx-ds.stoepe.home/dc=stoepe,dc=home?givenname,sn,mail?sub?(givenname=Christoph) '
DN: uid=stoepe,dc=stoepe,dc=home
    givenName: Christoph
    sn: Stoettner
    mail: stoepe@stoepe.home
```

ldap(s)://cnx-ds.stoepe.home/dc=stoepe,dc=home? cn,mail ? base ? (objectclass=*)

protocol://host base DN kommagetrennt Attribute scope base|one|sub filter

Figure 1: Struktur der LDAP URL, Rückgabe CN

ldap(s)://cnx-ds.stoepe.home/dc=stoepe,dc=home? ? sub ? (&(objectclass=person)(givenname=Christoph))

protocol://host base DN all attributes base|one|sub filter

Figure 2: LDAP URL, Rückgabe alle Attribute

SFTP / SCP

```
curl sftp://example.com/somefile.zip -u user
curl scp://example.com/somefile.zip -u user
curl sftp://example.com/ -u user
curl sftp://example.com/~somefile.zip -u user
```

- `-T, --upload-file <file>` Upload einer lokalen Datei
- Download mit Option `-O` oder `-o` Dateiname
- `--key <key>` SSH key zur Authentifizierung

MQTT

- Subscription (Terminal 1)
 - `-o` schreibt die Antworten in eine Datei

```
curl -N mqtt://broker.emqx.io/curl/test
```

- Publish (Start in Terminal 2 - Ausgabe sichtbar in 1)

```
curl -v -d "Hello from curl" mqtt://broker.emqx.io/curl/test
```

- Verbindungstest

```
curl -v mqtt://broker.emqx.io/test
```

MQTT - Demo

```
$ curl -N mqtt://broker.emqx.io/curl/test -o output.txt
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left     Speed
100    30    100    30     0     0      3     0  0:00:10  0:00:08  0:00:02    5

$ cat output.txt
curl/testHello from CLT 2026%
```

```
$ curl -v -d "Hello from CLT 2026" mqtt://broker.emqx.io/curl/test
* Host broker.emqx.io:1883 was resolved.
* Connected to broker.emqx.io (44.232.241.40) port 1883
* Using client id 'curlxcPQKT2M'
> MQTT<
    curlxcPQKT2Mmqtt_doing: state [0]
* mqtt_doing: state [0]
< mqtt_doing: state [2]
< 0    curl/testHello from CLT 2026shutting down connection #0``
```

DICT

- DICT ist ein Protokoll für Wörterbuchabfragen
- Aliase für `m` sind `match` und `find`
- Aliase für `d` sind `define` und `lookup`

```
curl dict://dict.org/d:Chemnitz
220 dict.dict.org dictd 1.12.1/rf on Linux 4.19.0-10-amd64 <auth.mime> <671773095.13632.1774187333@dict.dict.org>
250 ok
150 1 definitions retrieved
151 "chemnitz" wn "WordNet (r) 3.0 (2006)"
Chemnitz
  n 1: a city in east central Germany; formerly called Karl-Marx-
      Stadt until 1990; noted for textile manufacturing [syn:
      {Chemnitz}, {Karl-Marx-Stadt}]
.
...
```

Trivial File Transfer Protocol (TFTP)

- Download

```
curl -O tftp://localhost/file.boot
```

- Upload Beispiel

```
curl -k -u admin:xxxxxx -H "Accept:pplication/json" \  
--cacert /etc/puppetlabs/puppet/ssl/certs/ca.pem \  
--cert /etc/puppetlabs/puppet/ssl/certs/foreman.localdomain.pem \  
--key /etc/puppetlabs/puppet/ssl/private_keys/foreman.localdomain.pem \  
-X POST https://foreman:8443/tftp/00:11:22:33:44:55 \  
--data "syslinux_config=cat data.json"
```

SMB

- Upload und Download
- Kann keine Verzeichnislisten anzeigen
- Unterstützt nur SMB v1
- Authentifizierung benutzt NTLMv1 und nicht v2
- Critical Risks and Performance Impact of Using NTLM v1 and SMB v1 Protocols



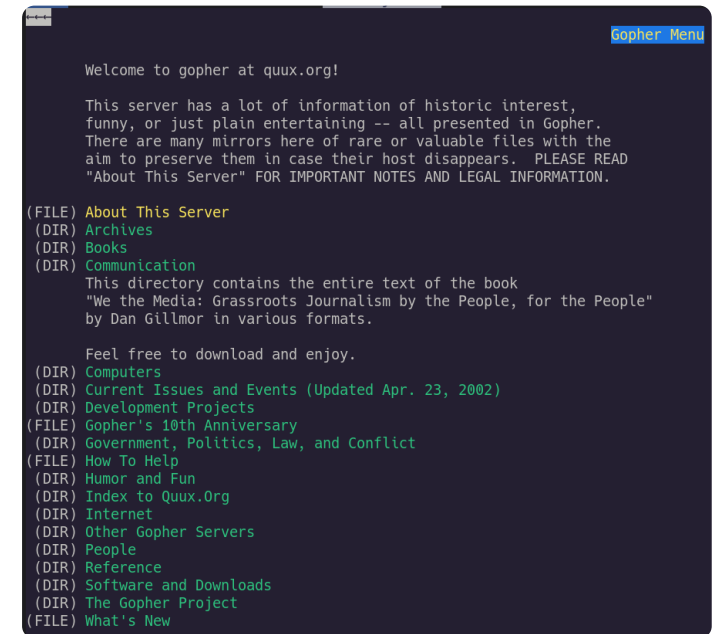
Photo: @stadsa

Gopher



Gopher wurde 1991 unter der Leitung von Mark P. McCahill an der Universität von Minnesota entwickelt und ähnelt dem World Wide Web (WWW) in einem frühen Zustand.

```
curl 'gopher://quux.org/'
iWelcome to gopher at quux.org! fake      (NULL)  0
i      fake      (NULL)  0
iThis server has a lot of information of historic interest,      fake      (NULL)
ifunny, or just plain entertaining -- all presented in Gopher.  fake      (NULL)
...
0About This Server      /About This Server.txt  gopher.quux.org 70      +
1Archives      /Archives      gopher.quux.org 70      +
1Books  /Books  gopher.quux.org 70      +
...
0What's New      /whatsnew.txt  gopher.quux.org 70      +
```



Lynx as Gopher client

Gopher Verzeichnisse /1/

```
curl 'gopher://quux.org/1/Archives'
1Mailing Lists /Archives/Mailing Lists gopher.quux.org 70 +
0Project Gutenberg Online Books /Archives/gutenberg gopher.quux.org 70
1Usenet Archives from 1981 /Archives/usenet-a-news gopher.quux.org 70 +
1Wiretap Electronic Documents /Archives/mirrors/wiretap.area.com gopher.quux.org 70
1mirrors /Archives/mirrors gopher.quux.org 70 +
```

Gopher Dokumente /0/

```
curl gopher://quux.org:70/0/About%20This%20Server.txt
Welcome to the gopher server at quux.org!
```

```
This is one of the world's few maintained, modern gopher servers. On it,
you will find a huge collection of information, files, software, archives,
...
```

```
curl 'gopher://quux.org/0/whatsnew.txt'
NEW THINGS ON QUUX.ORG
-----
```

April 2, 2002

- * Major expansion. Added EFF mirror, the US Congress Bills, expanded many other mirrors, updated textfiles mirror.
- * Placed much more material in proper files.
- * This site now contains over 200,000 files.

A satellite view of Earth from space, showing the curvature of the planet and city lights at night. The image captures a wide expanse of the Earth's surface, with the dark blue of the oceans and the white of the clouds contrasting with the bright yellow and orange lights of urban areas. The horizon line is visible, separating the Earth from the blackness of space.

Optionen für alle Protokolle

Downloads / Output

- Jede heruntergeladene Datei braucht ein Ziel!
 - `stdout` oder eine Datei
- `-o`, `--output <Dateiname>`
- `-O`, `--remote-name`, speichere mit dem Remote-Dateinamen
- `--remote-name-all` setzt `-O` für alle URLs

Progress

- Progress Bar beim Download

- `--progress-bar`

```
presentations/demo/clt2026-casts on └─ main [!?]
◆ [fedora-stoepts] > curl --progress-bar -L -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-boot.iso
#####
15.6%
```

- Normaler Download

```
presentations/demo/clt2026-casts on └─ main [!?] took 52s
◆ [fedora-stoepts] > curl -L -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-boot.iso
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           %             0         0     13.4M      0   0:01:08   0:00:05   0:01:03  14.8M
```

URLs and Optionen

- `curl` akzeptiert mehrere URLs pro Kommando
- erstes `-o` enthält den Dateinamen der ersten URL!

```
curl -o file1 -o file2 https://example.com/file1 https://example.com/file2
```

```
curl -o file1 https://example.com/file1 https://example.com/file2 -o file2
```

```
curl -o file1 \  
    https://example.com/file1 \  
    -o file2 \  
    https://example.com/file2
```

Mehrere Dateien herunterladen

- Download von 2 ISO Dateien

```
presentations/demo/clt2026-casts on $ main [!?]
$ [fedora-stoepe] > curl -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-boot.iso --next -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-minimal.iso
```

% Total	% Received	% Xferd	Average Speed	Time	Time	Time	Current
			Dload Upload	Total	Spent	Left	Speed
100	926M	100	926M	0	0	15.6M	0
				0:00:59	0:00:59	--:--:--	16.0M

% Total	% Received	% Xferd	Average Speed	Time	Time	Time	Current
			Dload Upload	Total	Spent	Left	Speed
32	1464M	32	471M	0	0	14.6M	0
				0:01:40	0:00:32	0:01:08	14.7M

- Paralleles Herunterladen

```
presentations/demo/clt2026-casts on $ main [!?] took 9s
$ [fedora-stoepe] > curl -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-boot.iso --next -O https://mirror.netzwerke.de/almalinux/10.1/isos/x86_64/AlmaLinux-10.1-x86_64-minimal.iso --parallel
```

DL%	UL%	Dled	Uled	Xfers	Live	Total	Current	Left	Speed
57	--	1385M	0	2	1	0:03:13	0:01:37	0:01:21	12.3M

URL encode

- `trurl` zur Konvertierung
- oder `--url-query` Kommandozeilen Option

```
curl 'http://example.com/index.php?name=Christoph Stöttner' # malformed
curl 'http://example.com/index.php?name=Christoph+St%c3%b6ttner' # urlencoded
curl http://example.com/index.php --url-query 'name=Christoph Stöttner'
```

```
GET /index.php?name=Christoph+St%c3%b6ttner HTTP/1.1
Host: example.com
User-Agent: curl/8.15.0
Accept: */*
```

```
curl http://example.com/index.php --url-query 'name=Christoph Stöttner' -v
...
* using HTTP/1.x
> GET /index.php?name=Christoph+St%C3%B6ttner HTTP/1.1
> Host: example.com
> User-Agent: curl/8.21.0
> Accept: */*
```



HTTP Anfragen

- Standard HTTP Request (`-X GET` ist Default)

```
curl -X GET https://stoeps.de
```

```
presentations/demo/clt2026-casts on main [!?] took 2m39s
```

```
◆ [fedora-stoeps] > curl -X GET https://stoeps.de -L
```

```
<!doctype html><html lang=en><head><meta charset=utf-8><meta http-equiv=x-ua-compatible content="ie=edge; chrome=1"><meta name=viewp  
ort content="width=device-width,initial-scale=1,maximum-scale=5"><title>stoeps.de - Christoph Stoettner's Blog &#183; stoeps' blog</  
title><meta name=geo.position content="49.642538;8.638950"><meta name=geo.region content="DE"><meta name=geo.placename content="Hepp  
enheim, Germany"><meta name=ICBM content="49.642538, 8.638950"><meta name=DC.title content="stoeps' blog"><meta name=author content=
```

Webseite abfragen

HTTP Status 3xx - Umleitung

- HTTP Calls mit Response Code 3xx (Umleitung)

```
curl -XGET https://chemnitzer.linux-tage.de
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">
<html><head>
<title>302 Found</title>
</head><body>
<h1>Found</h1>
<p>The document has moved <a href="https://chemnitzer.linux-tage.de/2026">here</a>.</p>
</body></html>
```

3xx Umleitung zu neuer Location folgen

- `-L, --location` // Beispiel mit haproxy

```
curl -XGET https://chemnitzer.linux-tage.de --location
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml" lang="de" xml:lang="de"
  dir="ltr">
<head>
  <meta content="width=device-width, initial-scale=1.0, maximum-scale=3.0" name="viewport"/>
<meta name="description" content="Die Chemnitzer Linux-Tage sind eine Veranstaltung rund um das Thema Linux und Open Source für jeder
<meta name="keywords"
  content="Linux, Linux-Tag, Linux-Tage, Chemnitzer Linux-Tag, Chemnitzer Linux-Tage 2026, Chemnitz, Open Source, 2026, Insider,
<meta name="robots" content="index, follow"/>
```

SSL Zertifikate

- Selfsigned Zertifikate, Hostname mismatch, abgelaufene Zertifikate erzeugen Fehler
- `-k` alle Zertifikatsfehler ignorieren
- `--ca-native` System Key

```
$ curl https://expired.badssl.com/
curl: (60) SSL certificate problem: certificate has expired
More details here: https://curl.se/docs/sslcerts.html

curl failed to verify the legitimacy of the server and therefore could not
establish a secure connection to it. To learn more about this situation and
how to fix it, please visit the webpage mentioned above.
```

Abgelaufenes SSL Zertifikat ignorieren

```
curl https://expired.badssl.com/ -k
<!DOCTYPE html>
<html>
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <title>expired.badssl.com</title>
  <link rel="stylesheet" href="/style.css">
  <style>body { background: red; }</style>
</head>
<body>
<div id="content">
  <h1 style="font-size: 12vw;">
    expired.<br>badssl.com
  </h1>
</div>
</body>
</html>
```

SSL Protokolle testen

- nur TLS 1.1
 - `curl https://stoeps.de -v --tlsv1.1 --tls-max 1.1`
- nur TLS 1.2
 - `curl https://stoeps.de -v --tlsv1.2 --tls-max 1.2`
- nur TLS 1.3
 - `curl https://stoeps.de -v --tlsv1.3 --tls-max 1.3`
- minimal TLS 1.1, maximal TLS 1.2
 - `curl https://stoeps.de -v --tlsv1.1 --tls-max 1.2`
- mindestens TLS 1.0
 - `curl https://stoeps.de -v --tlsv1.0`

Websockets mittels `wss://`

- `Connection: upgrade` automatisch

```
curl --no-progress-meter --no-buffer wss://echo.websocket.org -v
```

```
< upgrade: websocket
< connection: Upgrade
< sec-websocket-accept: kYxJcvZB0Ry3mYSjifDWmKqN22o=
< date: Thu, 26 Mar 2026 18:05:06 GMT
< server: Fly/58128dbb4 (2026-03-25)
< via: 1.1 fly.io, 1.1 fly.io
< fly-request-id: 01KMNN4JPHH9XNCNHT1F3DN95E-fra
<
* [WS] Received 101, switch to WebSocket; mask 111e9f0d
Request served by 4d896d95b55478
```

A close-up photograph of a silver stethoscope resting on a black Samsung smartphone. The stethoscope's chest piece is centered on the phone's screen. The background is a textured, light-colored surface. The text 'Troubleshooting mit curl' is overlaid in blue, sans-serif font across the middle of the image.

Troubleshooting mit `curl`

Kubernetes Ingress Konfiguration überprüfen

```
apiVersion: networking.k8s.io/v1
kind: Ingress
...
spec:
  ingressClassName: cnx-ingress-traefik
  rules:
    - host: cnx8-db2.stoepts.home
      http:
        paths:
          - backend:
              service:
name: orient-web-client
port:
  number: 8000
  path: /social
  pathType: Prefix
...
```

- `cnx8-db2.stoepts.home` vorgelagerter LB
- Kubernetes Nodes haben anderen Namen

--connect-to

- Request für HOST1:PORT an HOST2:PORT2 senden
- Syntax `curl --connect-to HOST1:PORT1:HOST2:PORT2 ...`
- Original Call: `https://cnx8-db2.stoepe.home/cnxadmin`
- Wir wollen ohne LB testen

```
curl -kL https://cnx8-db2-cp.stoepe.home:32443/cnxadmin
# 404
```

```
curl -kL \
  --connect-to cnx8-db2.stoepe.home:443:cnx8-db2-cp.stoepe.home:32443 \
  https://cnx8-db2.stoepe.home/cnxadmin
# Page delivered
```

- mit entsprechenden Headern auch ohne `--connect-to` möglich
- einfachste Lösung um Verbindungen ohne LB zu testen

Namensauflösung

```
NameVirtualHost *:80
<VirtualHost *:80>
    ServerName www.example.com
    DocumentRoot "/www/domain"
</VirtualHost>

<VirtualHost *:80>
    ServerName other.example.com
    DocumentRoot "/www/otherdomain"
</VirtualHost>
```

- Ohne `/etc/hosts` Änderung testen?

--resolve

- Normale Seite von www.example.com

```
curl http://www.example.com
<!doctype html><html lang="en"><head><title>Example Domain</title><
```

- Lokalen Webserver mit www.example.com aufrufen

```
curl --resolve www.example.com:80:10.0.22.90 http://www.example.com
<!DOCTYPE html>
...
    <title>domain</title>

curl --resolve other.example.com:80:10.0.22.90 http://other.example.com
<!DOCTYPE html>
...
    <title>otherdomain</title>
```

DNS over HTTPS

- `--doh-url`
- Angabe eines Hosts für DNS over HTTPS

```
curl --doh-url https://cloudflare-dns.com/dns-query https://chemnitzer.linux-tage.de
```

- Auflösung des DoH Servers mit `--resolve` ändern

```
curl --doh-url https://doh.example --resolve doh.example:443:192.0.2.1 https://example.com
```



NO
UNAUTHORISED
ACCESS

Authentifizierung

- Basic Auth

- `--user, -u username:password`

- Digest

```
curl --digest --user stoeps:pass http://example.com/
```

- Negotiate (Spnego/Kerberos)

```
curl --negotiate --user stoeps:pass http://example.com/
```

- NTLM

```
curl --ntlm --user stoeps:pass http://example.com/
```



Authentifizierung `.netrc`

- Pfad
 - Global in `~/.netrc`
 - Oder mit Umgebungsvariable `NETRC`
 - `curl --netrc-file <filename>`
- Aktivieren mit `-n` bzw. `--netrc`
- Format:

```
default login anonymous password user@site  
machine-name login anonymous password user@site
```

```
machine-name  
login anonymous  
password password
```

Form based Authentication

- -X POST

```
curl 'https://other.example.com/homepage/j_security_check' \  
-X POST \  
-H 'User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:148.0) Gecko/20100101 Firefox/148.0' \  
-H 'Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8' \  
-H 'Content-Type: application/x-www-form-urlencoded' \  
--data-raw 'service.name=&secure=&fragment=&j_username=my_username&j_password=my_password'
```

Cookies

- Anmeldung und Cookies in Datei schreiben `-c, --cookie-jar`

```
curl -v 'https://preview.hclconnections.net/homepage/j_security_check' \  
-H @header.txt \  
--data @data.txt \  
--cookie-jar cookiestxt
```

- Request mit vorher erstellter Cookie Datei `-b, --cookie`

```
curl https://preview.hclconnections.net/profiles/photo.do?userid=2a498bd0-3d7f-103c-9a59-c5858c984eb9 \  
-I \  
--cookie cookiestxt
```

Cookies aktualisieren

- Oder kombiniert, `curl` aktualisiert dann Cookies im jar

```
curl https://preview.hclconnections.net/profiles/photo.do?userid=2a498bd0-3d7f-103c-9a59-c5858c984eb9 \
-I \
--cookie-jar cookiestxt \
--cookie cookiestxt
```

```
# Netscape HTTP Cookie File
# https://curl.se/docs/http-cookies.html
# This file was generated by libcurl! Edit at your own risk.

#HttpOnly_preview.hclconnections.net FALSE / TRUE 0 JSESSIONID 0000FMswii6vxnVO7Bmg_O8Y10c:1ij6o8eh3
preview.hclconnections.net FALSE / TRUE 0 lcLang en_us
#HttpOnly_.hclconnections.net TRUE / TRUE 0 LtpaToken2 8qQux21qN8e7...
```

Config-Datei

- Default: `~/.curlrc`
- `-K [file]` or `--config [file]`

```
# Enable verbose output for debugging
verbose

# Suppress progress meter but still show error messages
silent

# Set default user agent
user-agent = "Mozilla/5.0 (compatible; ExampleBot/1.0)"

# Follow redirects
location
```

Fragen Links

- curl.se
- Daniel Stenberg
- GitHub [curl/curl](https://github.com/curl/curl)
- Everything curl
- Mastering curl

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References

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