

# **Netzwerke I**

## **Aufgabenblatt 5**

Hochschule München

Studiengang: Informatik

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Gruppe: 12

Studiengruppe: IF3B

## Aufgabe 5.1: SMTP-Protokoll

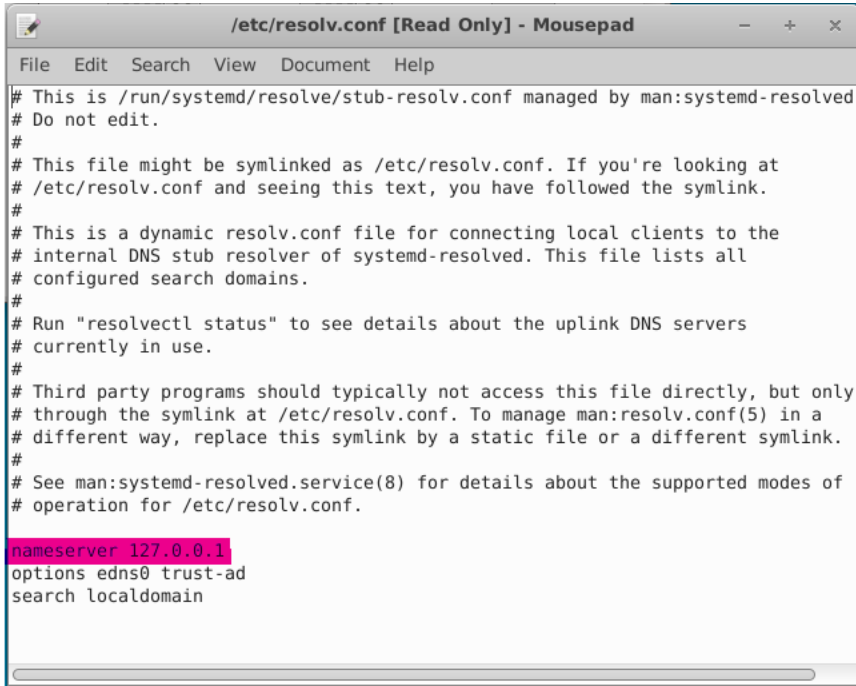
The screenshot shows an email client interface with a sidebar on the left containing folders like 'Favoriten', 'Posteingang', 'Gesendete Elemente', 'Entwürfe', 'Kammerlocher, Ti...', 'Entwürfe', 'Gesendete E...', 'Gelöschte Ele...', 'Archiv', 'Junk-E-Mail', and 'Notizen'. The main pane displays an email from Vincenzo Auricchio (v.auricchio@hm.edu) with the subject 'Netzwerke Abgabe'. A 'Nachrichtendetails' window is open, showing the following SMTP header information:

```
Received: from localhost [localhost (127.0.0.1)]
by mailrelay4.rz.fh-muenchen.de (Postfix) with ESMTP id 85B077690F6
for <tim.kammerlocher@hm.edu>; Thu, 1 Dec 2022 14:18:50 +0100 (CET)
X-Virus-Scanned: amavis-new at hm.edu
X-Amavis-Alert: BAD HEADER SECTION, Missing required header field: "Date"
Received: from mailrelay4.rz.fh-muenchen.de [127.0.0.1]
by localhost (mailrelay4.rz.fh-muenchen.de [127.0.0.1]) (amavis-new, port 10024)
with LMTMP id 67YGqpylvz59 for <tim.kammerlocher@hm.edu>;
Thu, 1 Dec 2022 14:18:50 +0100 (CET)
Received: from cs.hm.edu (b004.hm.vpn.lrz.de [129.187.52.4])
by mailrelay4.rz.fh-muenchen.de (Postfix) with SMTP id 550DE8D91
for <tim.kammerlocher@hm.edu>; Thu, 1 Dec 2022 14:14:38 +0100 (CET)
From: Vincenzo Auricchio <v.auricchio@hm.edu>
To: Tim Kammerlocher <tim.kammerlocher@hm.edu>
Subject: Netzwerke Abgabe
Message-ID: <20221201131850.85B077690F6@mailrelay4.rz.fh-muenchen.de>
Date: Thu, 1 Dec 2022 14:18:50 +0100
Return-Path: v.auricchio@hm.edu
X-MS-Exchange-Organization-AuthSource: BADWLZR-SWEX06A.ads.mwn.de
X-MS-Exchange-Organization-AuthAs: Anonymous
X-MS-Exchange-Transport-EndToEndLatency: 00:00:00.1761520
```

The 'Schließen' button is visible at the bottom right of the details window.

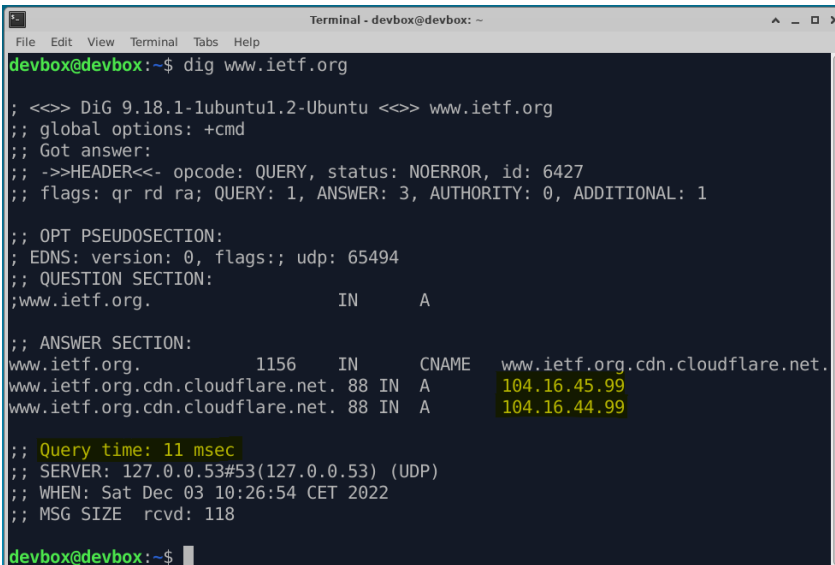
## Aufgabe 5.3: DNS-Server BIND

### b) Anpassung der IP-Adresse für die Namensauflösung



```
/etc/resolv.conf [Read Only] - Mousepad
File Edit Search View Document Help
# This is /run/systemd/resolve/stub-resolv.conf managed by man:systemd-resolved
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "resolvectl status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.
nameserver 127.0.0.1
options edns0 trust-ad
search localdomain
```

### d: Auflösen der Adresse www.ietf.org



```
Terminal - devbox@devbox: ~
File Edit View Terminal Tabs Help
devbox@devbox:~$ dig www.ietf.org

; <<>> DiG 9.18.1-1ubuntu1.2-Ubuntu <<>> www.ietf.org
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6427
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;www.ietf.org.                IN      A

;; ANSWER SECTION:
www.ietf.org.                1156    IN      CNAME   www.ietf.org.cdn.cloudflare.net.
www.ietf.org.cdn.cloudflare.net. 88 IN    A       104.16.45.99
www.ietf.org.cdn.cloudflare.net. 88 IN    A       104.16.44.99

;; Query time: 11 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Sat Dec 03 10:26:54 CET 2022
;; MSG SIZE rcvd: 118

devbox@devbox:~$
```

```
Terminal - devbox@devbox: /etc
devbox@devbox:/etc$ dig @localhost www.ieee.org

; <<>> DiG 9.18.1-lubuntu1.2-Ubuntu <<>> @localhost www.ieee.org
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 23965
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: b526553d1d2f5abd01000000638a4e6f04f828d858942038 (good)
;; QUESTION SECTION:
;www.ieee.org.                IN      A

;; ANSWER SECTION:
www.ieee.org.                600     IN      CNAME   www.ieee.org.edgekey.net.
www.ieee.org.edgekey.net.    21600   IN      CNAME   e1630.c.akamaiedge.net.
e1630.c.akamaiedge.net.     20      IN      A        104.102.21.77

;; Query time: 1307 msec
;; SERVER: 127.0.0.1#53(localhost) (UDP)
;; WHEN: Fri Dec 02 20:13:51 CET 2022
;; MSG SIZE rcvd: 159

devbox@devbox:/etc$
```

e: Besuchen der Webseiten <http://www.wappengravur.de> und <https://wappengravur.de>

```
Terminal - devbox@devbox: ~
devbox@devbox:~$ dig www.wappengravur.de

; <<>> DiG 9.18.1-lubuntu1.2-Ubuntu <<>> www.wappengravur.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 1566
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

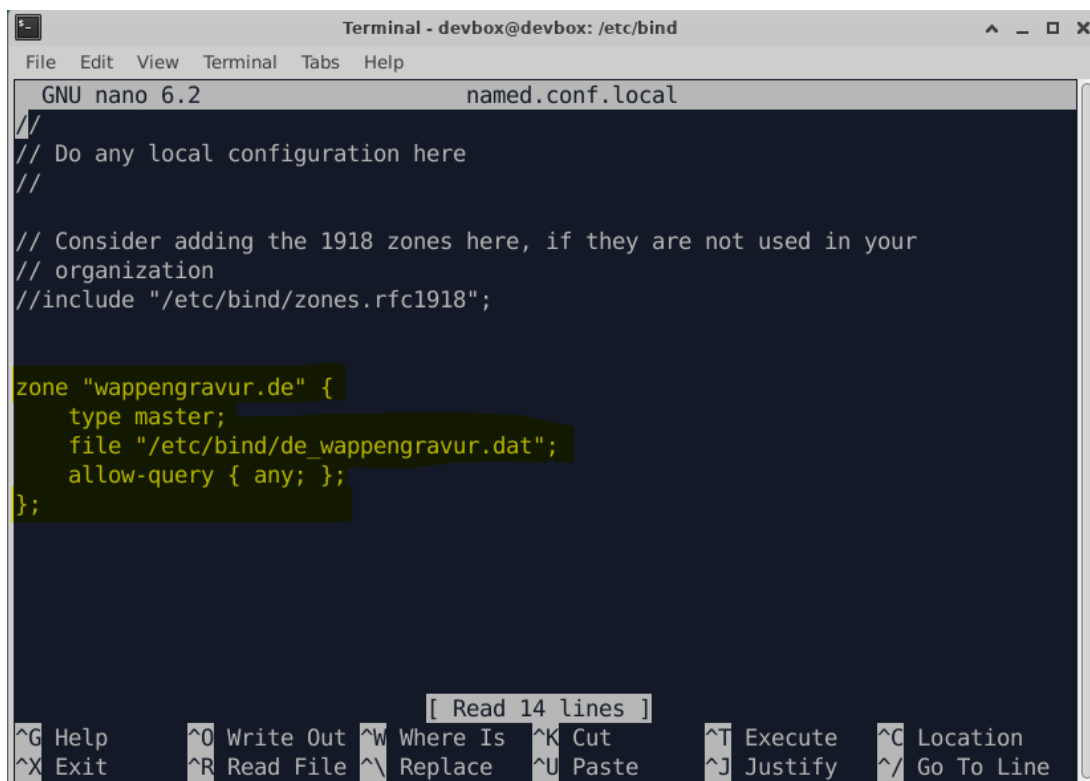
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;www.wappengravur.de.        IN      A

;; ANSWER SECTION:
www.wappengravur.de.        86117   IN      A        88.99.191.159

;; Query time: 7 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Sat Dec 03 10:29:14 CET 2022
;; MSG SIZE rcvd: 64

devbox@devbox:~$
```

## f: Konfiguration des primären Nameserver für wappengravur.de

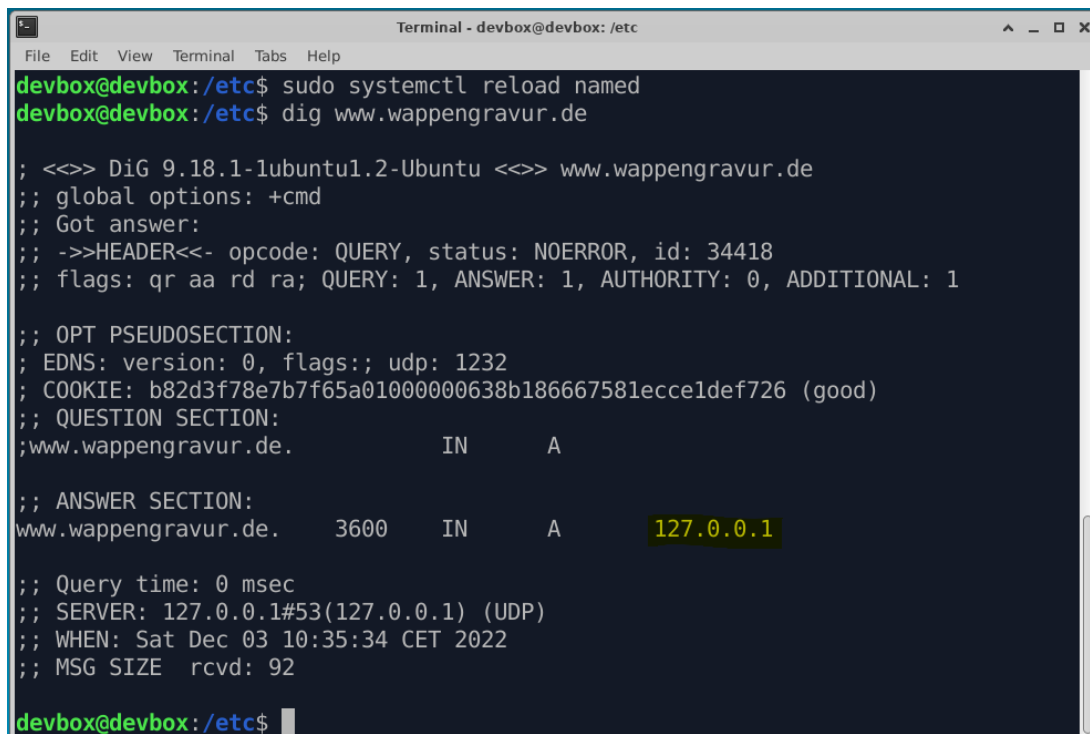


```
Terminal - devbox@devbox: /etc/bind
GNU nano 6.2      named.conf.local
//
// Do any local configuration here
//
// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";

zone "wappengravur.de" {
    type master;
    file "/etc/bind/de_wappengravur.dat";
    allow-query { any; };
};

[ Read 14 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

## g: IP-Adresse von www.wappengravur.de nach Nameserver Konfiguration



```
Terminal - devbox@devbox: /etc
devbox@devbox:/etc$ sudo systemctl reload named
devbox@devbox:/etc$ dig www.wappengravur.de

; <<>> DiG 9.18.1-lubuntu1.2-Ubuntu <<>> www.wappengravur.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 34418
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

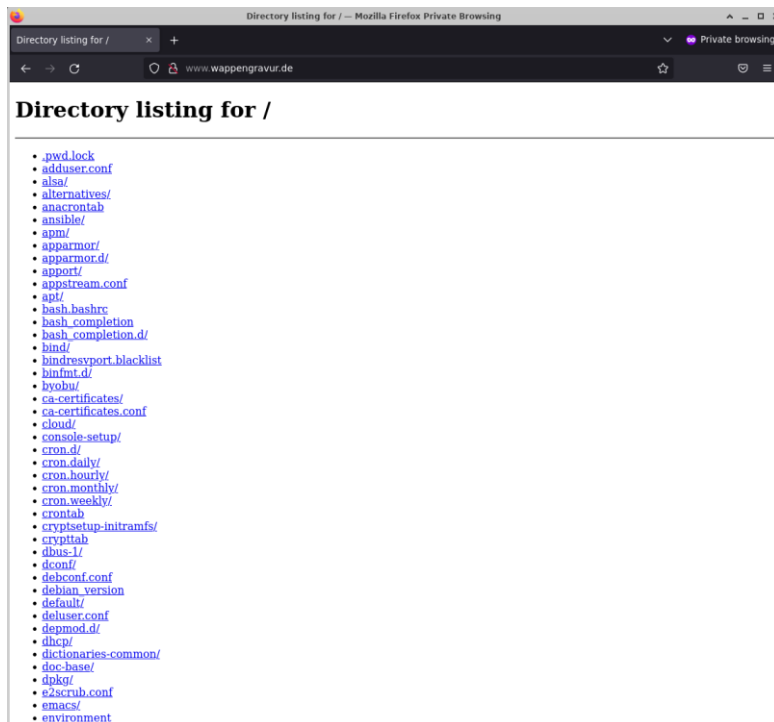
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: b82d3f78e7b7f65a01000000638b186667581ecce1def726 (good)
;; QUESTION SECTION:
;www.wappengravur.de.      IN      A

;; ANSWER SECTION:
www.wappengravur.de.      3600    IN      A      127.0.0.1

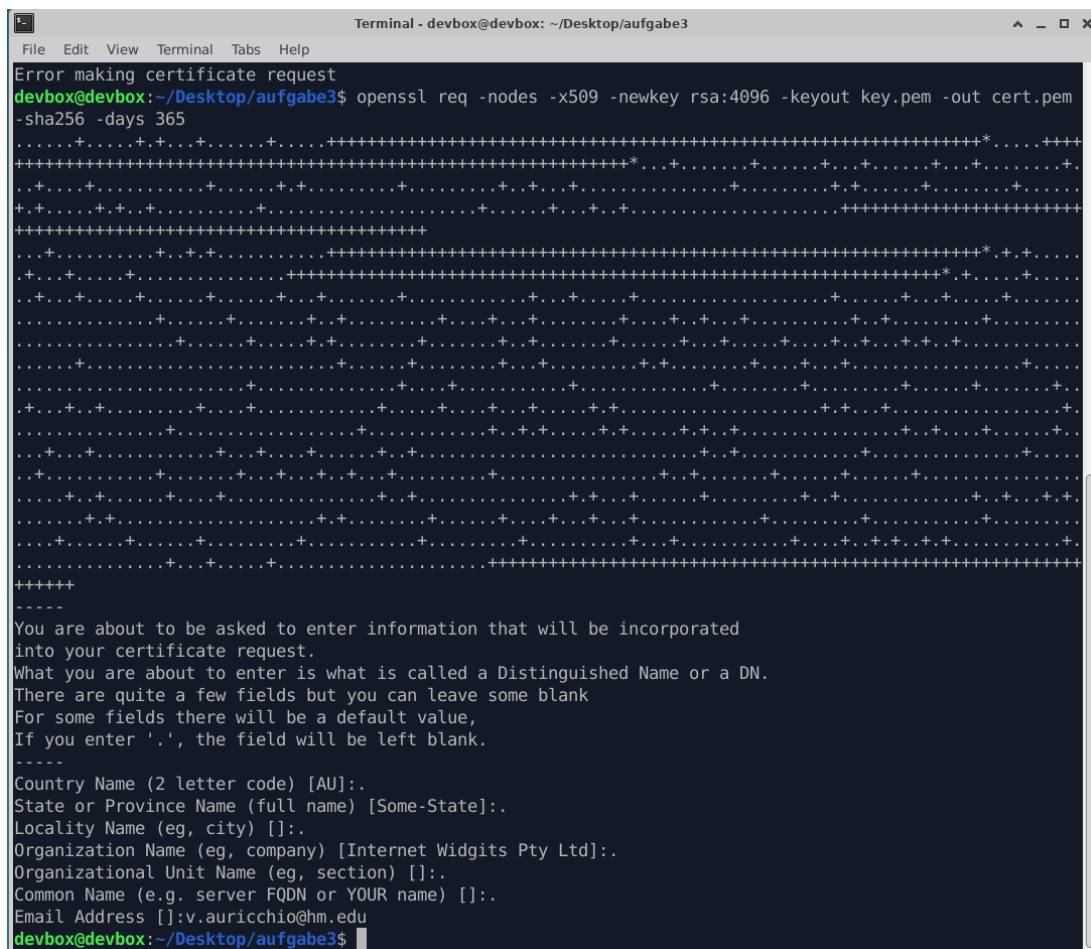
;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Sat Dec 03 10:35:34 CET 2022
;; MSG SIZE rcvd: 92

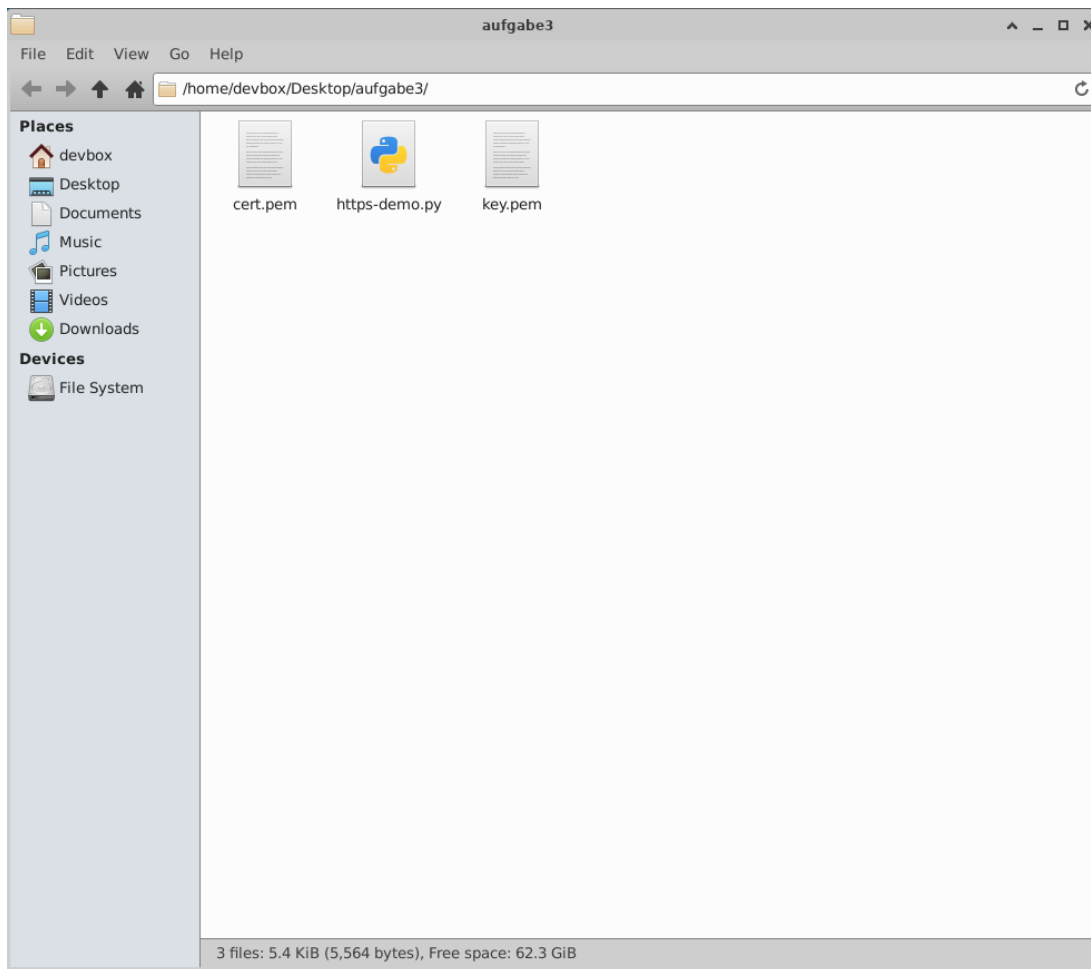
devbox@devbox:/etc$
```

## h: Python Server und Webbrowser Ansicht



## i: Zertifikatgenerierung





Der key.pem ist der private key und cert.pem die Zertifikatsdatei.

Nun kann man uns nicht mehr so schnell schadhafte Dinge unterjubeln, sobald wir die Seite aufrufen!



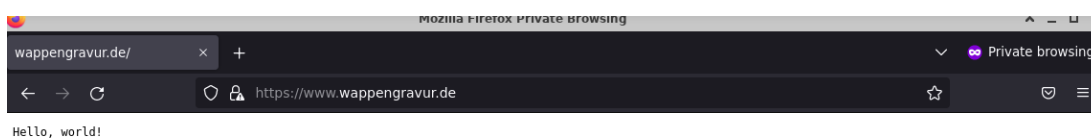
### Warning: Potential Security Risk Ahead

Firefox detected a potential security threat and did not continue to **www.wappengravur.de**. If you visit this site, attackers could try to steal information like your passwords, emails, or credit card details.

[Learn more...](#)

[Go Back \(Recommended\)](#)

[Advanced...](#)



## j: Information über Mailserver

```
Terminal - devbox@devbox: /
File Edit View Terminal Tabs Help

;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 31873
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 3

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 382d08547422806501000000638b1bfa4f796b9287386c20 (good)
;; QUESTION SECTION:
;wappengravur.de.                IN      MX

;; ANSWER SECTION:
wappengravur.de.                3600    IN      MX      20 mail2.wappengravur.de.
wappengravur.de.                3600    IN      MX      10 mail1.wappengravur.de.

;; ADDITIONAL SECTION:
mail1.wappengravur.de.          3600    IN      A        10.0.0.1
mail2.wappengravur.de.          3600    IN      A        10.0.0.2

;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Sat Dec 03 10:50:50 CET 2022
;; MSG SIZE rcvd: 148

devbox@devbox:/$
```

## k: Alias für test.wappengravur.de erstellen

```
Terminal - devbox@devbox: /etc/bind
File Edit View Terminal Tabs Help

GNU nano 6.2                                de wappengravur.dat
Zone file for wappengravur.de

$TTL 1H
@      IN      SOA      ns1.wappengravur.de. hostmaster.wappengravur.de. (
2022101001      ; serial, todays date + todays serial
8H              ; refresh, seconds
2H              ; retry, seconds
4W              ; expire, seconds
1D )            ; minimum, seconds

      NS       ns1.wappengravur.de.

      IN      A        127.0.0.1
      IN      MX       10 mail1
      IN      MX       20 mail2

*      IN      A        127.0.0.1

ns1     A        127.0.0.1
mail1   A        10.0.0.1
mail2   A        10.0.0.2

test    A        10.1.2.3
sonne   CNAME    test
```



```
Terminal - devbox@devbox: /etc/bind
File Edit View Terminal Tabs Help
devbox@devbox:/etc/bind$ dig sonne.wappengravur.de

; <<>> DiG 9.18.1-lubuntu1.2-Ubuntu <<>> sonne.wappengravur.de
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 62586
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 81e474e157dac15901000000638b1cc3389a68bf8a2f2800 (good)
;; QUESTION SECTION:
;sonne.wappengravur.de.      IN      A

;; ANSWER SECTION:
sonne.wappengravur.de.  3600    IN      CNAME   test.wappengravur.de.
test.wappengravur.de.  3600    IN      A       10.1.2.3

;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Sat Dec 03 10:54:11 CET 2022
;; MSG SIZE rcvd: 113

devbox@devbox:/etc/bind$
```