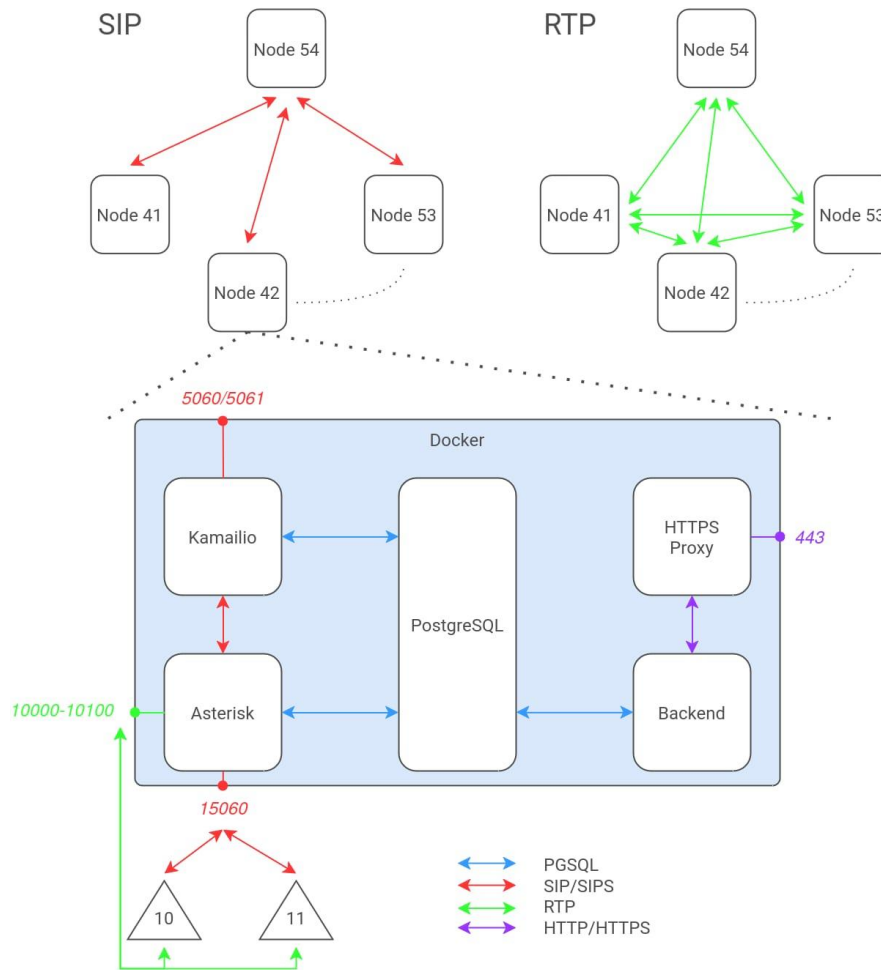


# Projekt VOIP II

Zadání projektu:



Service	Ports	Protocol
Asterisk	5060	UDP
Kamailio	5070	UDP
Backend	443	TCP
Postgre	5432	TCP

Kontejnery Docker:

- Asterisk
- Postgre
- Kamalio
- Backend (python)
- Proxy(Nginx)

```
root@DESKTOP-EPK08BB:~/voip-stack# docker-compose up -d
[+] Running 6/6
✔Network voip-stack_voip_net      Created           0.0s
✔Container voip-stack-backend-1   Started           4.2s
✔Container voip-stack-asterisk-1   Started           4.2s
✔Container voip-stack-postgres-1   Started           0.3s
✔Container voip-stack-https-proxy-1 Started           4.4s
✔Container voip-stack-kamailio-1   Started           4.3s
root@DESKTOP-EPK08BB:~/voip-stack#
```

Soubor docker-compose.yml

Asterisk:

```
asterisk:
  image: andrius/asterisk:latest
  ports:
    - "5060:5060/udp"
    - "10000-10100:10000-10100/udp"
    - "15060:15060/udp"
  volumes:
    - ./config/asterisk/pjsip.conf:/etc/asterisk/pjsip.conf
  networks:
    - voip_net
```

Kamalio:

```
kamailio:
  image: ghcr.io/kamailio/kamailio:5.8.4-bookworm
  ports:
    - "5070:5060/udp"
    - "5071:5061/tcp"
  depends_on:
    - postgres
  networks:
    - voip_net
```

Postgre:

```
postgres:
  image: postgres:latest
  environment:
    POSTGRES_USER: kamilio
    POSTGRES_PASSWORD: password
    POSTGRES_DB: kamailiodb
  volumes:
    - ./data/postgres:/var/lib/postgresql/data
  networks:
    - voip_net
```

Backend:

```
backend:
  image: tiangolo/uvicorn-gunicorn-fastapi:python3.9
  volumes:
    - ./backend:/app
  networks:
    - voip_net
```

Nginx (self signed crt):

```
https-proxy:
  image: nginx:latest
  ports:
    - "443:443"
  volumes:
    - ./nginx.conf:/etc/nginx/nginx.conf
    - ./ssl:/etc/nginx/ssl
  depends_on:
    - backend
  networks:
    - voip_net
```

App.py:

```
from flask import Flask

app = Flask(__name__)

@app.route('/')
def index():
    return "VoIP Backend is running!"

if __name__ == '__main__':
    app.run(host='0.0.0.0', port=8000)
```

Nginx.conf:

```
events {}
http {
    server {
        listen 443 ssl;
        server_name localhost;
        ssl_certificate /etc/nginx/ssl/nginx.crt;
        ssl_certificate_key /etc/nginx/ssl/nginx.key;
        location / {
            proxy_pass http://backend:80;
            proxy_set_header Host $host;
            proxy_set_header X-Real-IP $remote_addr;
        }
    }
}
```

Baresip:

```
# Examples:
#
# <sip:user@domain.com;transport=tcp>;auth_pass=secret
# <sip:1001@172.18.0.2;transport=udp>;auth_pass=password1001
# <sip:1000@172.18.0.2;transport=udp>;auth_pass=password1000
# <sip:10@172.18.0.2;transport=udp>;auth_pass=10
# <sip:11@172.18.0.2;transport=udp>;auth_pass=11
# <sip:user@[2001:df8:0:16:216:6fff:fe91:614c]:5070;transport=tcp>;auth_pass=secret
#
#<sip:root@domain>;auth_pass=PASSWORD
```

```
root@DESKTOP-EPK08BB:~/baresip# baresip
baresip v1.0.0 Copyright (C) 2010 - 2020 Alfred E. Heggstad et al.
Local network address: IPv4=eth0|172.24.131.34
audec: PCMU/8000/1
audec: PCMA/8000/1
ausrc: alsa
auplay: alsa
medianat: stun
medianat: turn
medianat: ice
Populated 4 accounts
Populated 3 contacts
Populated 2 audio codecs
Populated 0 audio filters
Populated 0 video codecs
Populated 0 video filters
baresip is ready.
10@172.18.0.2: {0/UDP/v4} 200 OK (Asterisk PBX 18.11.2) [1 binding]
reg: sip:1001@172.18.0.2: 401 Unauthorized (Asterisk PBX 18.11.2)
reg: sip:1000@172.18.0.2: 401 Unauthorized (Asterisk PBX 18.11.2)
11@172.18.0.2: {0/UDP/v4} 200 OK (Asterisk PBX 18.11.2) [1 binding]
```

```
docker inspect -f '{{range .NetworkSettings.Networks}}{{.IPAddress}}{{end}}' voip-stack-asterisk-1
```

```
Endpoint: <Endpoint/CID.....> <State.....> <Channels.>
  I/OAuth: <AuthId/UserName.....>
    Aor: <Aor.....> <MaxContact>
    Contact: <Aor/ContactUri.....> <Hash.....> <Status> <RTT(ms)..>
  Transport: <TransportId.....> <Type> <cos> <tos> <BindAddress.....>
  Identify: <Identify/Endpoint.....>
    Match: <criteria.....>
  Channel: <ChannelId.....> <State.....> <Time.....>
    Exten: <DialedExten.....> CLCID: <ConnectedLineCID.....>
=====
```

```
Endpoint: 10                                     Not in use    0 of inf
  InAuth: auth10/10
    Aor: 10                                       1
    Contact: 10/sip:10-0x55c92fa54f40@172.24.131.34:488 d5ea8608b2 NonQual    nan

Endpoint: 11                                     Not in use    0 of inf
  InAuth: auth11/11
    Aor: 11                                       1
    Contact: 11/sip:11-0x55c92fa56d20@172.24.131.34:488 d9b744c695 NonQual    nan
```

```
Objects found: 2
```

pjsip.conf

```
[10]
type=endpoint
context=internal
disallow=all
allow=ulaw
auth=auth10
aors=10
rtp_symmetric=yes
force_rport=yes
rewrite_contact=yes
direct_media=no

[auth10]
type=auth
auth_type=userpass
username=10
password=10




[10]
type=aor
max_contacts=1



[11]
type=endpoint
context=internal
disallow=all
allow=ulaw
auth=auth11
aors=11
rtp_symmetric=yes
force_rport=yes
rewrite_contact=yes
direct_media=no

[auth11]
type=auth
auth_type=userpass
username=11
password=11


[11]
type=aor
max_contacts=1
```

```
kamailio=# \dt
List of relations
Schema | Name | Type | Owner
-----+-----+-----+-----
public | subscriber | table | kamailio
(1 row)
```

  https://172.24.131.34

JSON   Surová data   Hlavičky

Uložit   Kopírovat   Sbalit vše   Rozbalit vše    Filtr JSON

msg: "VoIP Backend OK"

Main.py

```
from fastapi import FastAPI

app = FastAPI()

@app.get("/")
def read_root():
    return {"msg": "VoIP Backend OK"}
```