### Uni Software Defined Infrastructure Notes

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# Contributing

These study materials are heavily based on professor Goik's "Software Defined Infrastructure" lecture at HdM Stuttgart.

**Found an error or have a suggestion?** Please open an issue on GitHub (github.com/pojntfx/uni-sdi-notes):



Figure 1: QR code to source repository

If you like the study materials, a GitHub star is always appreciated :)



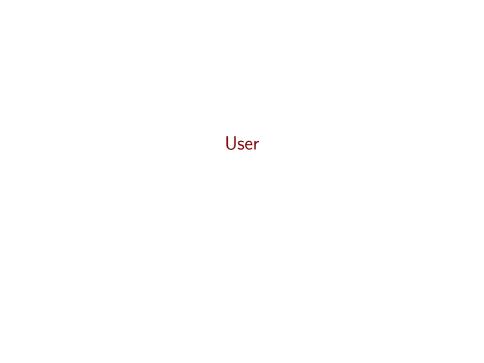
#### License



Figure 2: AGPL-3.0 license badge

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SPDX-License-Identifier: AGPL-3.0



#### User

ssh root@138.68.70.72
adduser pojntfx
usermod -aG sudo pojntfx
su pojntfx



#### SSH

```
sudo apt update
sudo apt install -y openssh-server
sudo systemctl enable --now ssh
mkdir -p ~/.ssh
chmod 700 ~/.ssh
curl 'https://github.com/pojntfx.keys' | tee -a ~/.ssh/autl
chmod 600 ~/.ssh/authorized_keys
exit
```



#### **UFW**

ssh pojntfx@138.68.70.72
sudo apt update
sudo apt install -y ufw
sudo systemctl enable --now ufw
sudo ufw default deny incoming
sudo ufw default allow outgoing
sudo ufw allow OpenSSH
sudo ufw enable



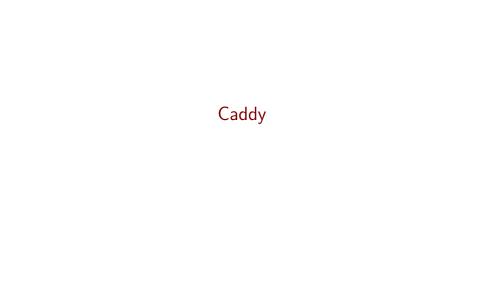
#### **APT**

```
sudo apt update
sudo apt install -y unattended-upgrades
sudo vi /etc/apt/apt.conf.d/50unattended-upgrades # Now rep
Unattended-Upgrade::Origins-Pattern {
  "origin=*";
Unattended-Upgrade::Automatic-Reboot "true";
Unattended-Upgrade::Automatic-Reboot-Time "02:00";
sudo dpkg-reconfigure unattended-upgrades # Answer with yes
sudo systemctl enable --now unattended-upgrades
sudo unattended-upgrades --debug # Test the configuration;
sudo reboot # If required
```



# Cockpit

echo 'deb http://deb.debian.org/debian bullseye-backports sudo apt update sudo apt install -t bullseye-backports -y cockpit



# Caddy curl -L 'https://dl.cloudsmith.io/public/caddy/stable/gpg.l curl -L 'https://dl.cloudsmith.io/public/caddy/stable/debis sudo apt update sudo apt install -y caddy sudo tee /etc/caddy/Caddyfile <<EOT {

```
email felix@pojtinger.com
}
cockpit.felixs-sdi1.alphahorizon.io {
        reverse_proxy https://localhost:9090 {
            transport http {
                tls_insecure_skip_verify
EOT
```

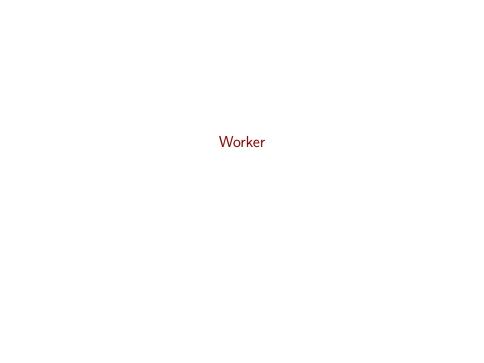
sudo systemctl enable --now caddy





# Manager sudo a sudo a

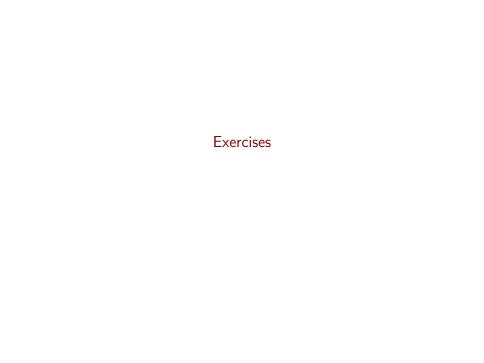
```
sudo apt update
sudo apt install -y bind9 bind9utils
sudo systemctl enable --now named
sudo vi /etc/bind/named.conf.options # Now add the following
version "not currently available";
recursion yes;
querylog yes;
allow-transfer { none; };
allow-query { any; };
sudo tee -a /etc/bind/named.conf.local <<EOT</pre>
zone "example.pojtinger" {
        type master;
        file "/etc/bind/db.example.pojtinger";
        allow-query { any; };
        allow-transfer { 159.223.25.154; 2a03:b0c0:3:d0::10
};
```



#### Worker

sudo apt update

```
sudo apt install -y bind9 bind9utils
sudo systemctl enable --now named
sudo vi /etc/bind/named.conf.options # Now add the following
version "not currently available";
recursion yes;
querylog yes;
allow-transfer { none; };
allow-query { any; };
sudo tee -a /etc/bind/named.conf.local <<EOT</pre>
zone "example.pojtinger" {
        type slave;
        file "db.example.pojtinger";
        allow-query { any; };
        masters { 138.68.70.72; 2a03:b0c0:3:d0::e34:5001; ]
};
```



#### Exercises

Use the dig command to query A/CNAME/MX/NS records from various machines/domains of your choice. Then execute reverse lookups as well.

```
execute reverse lookups as well.

# Get A/AAA records from manager server

$ dig +noall +answer @138.68.70.72 example.pojtinger A
```

example.pojtinger. 3600 IN A 138.68.70.

\$ dig +noall +answer @138.68.70.72 example.pojtinger AAAA example.pojtinger. 3600 IN AAAA 2a03:b0c0:

```
# Get A/AAAA records from worker server
```

\$ dig +noall +answer @159.223.25.154 example.pojtinger A
example.pojtinger. 3600 IN A 138.68.70.
\$ dig +noall +answer @159.223.25.154 example.pojtinger AAAA

```
example.pojtinger. 3600 IN AAAA 2a03:b0c0:
```

\$ dig +noall +answer @159.223.25.154 example.pojtinger NS