

Elbrus Analytics - Bereitstellungshandbuch

Tobias Schmidt

August 9, 2022

Bekanntes Problem: Beim herauskopieren von Befehlen wird das Apostrophe Zeichen falsch kopiert und führt zu Eingabe Störungen. Lösung: Apostrophe Zeichen des kopierten Befehls händisch im Terminal mit Apostrophe Zeichen austauschen.

1 Server Infrastruktur

1.1 SSH-Zugriff vorbereiten

Listing 1: Updaten vorhandener Packages.

```
root@server:~$ yum update -y
```

Listing 2: Installieren des 'ssh' Packages.

```
root@server:~$ yum install -y openssh-server
```

Listing 3: Starten des 'sshd' Services.

```
root@server:~$ systemctl start sshd
```

Listing 4: Aktivieren des 'sshd' Services.

```
root@server:~$ systemctl enable sshd
```

Listing 5: Anlegen des Users Elbrus.

```
root@server:~$ useradd elbrus
```

Listing 6: Hinzufügen des Users Elbrus zu der Gruppe 'wheel'.

```
root@server:~$ usermod -aG wheel elbrus
```

Listing 7: Ändern des Passwords für den User Elbrus.

```
root@server:~$ passwd elbrus
Changing password for user elbrus.
New password:
Retype new password:
passwd: all authentication tokens updated successfully
root@server:~$
```

Listing 8: Wechseln zu User elbrus.

```
root@server:~$ su elbrus
```

1.2 Initiale Server Konfiguration

Listing 9: Setzen der Zeitzone auf 'Europa/Wien'.

```
elbrus@server:~$ sudo timedatectl set-timezone Europe/Vienna
```

Listing 10: Installieren von dem 'firewalld' Service.

```
elbrus@server:~$ sudo dnf install firewalld
```

1.2.1 Node.Js

Listing 11: Installieren des Frameworks 'Node.Js'.

```
elbrus@server:~$ sudo dnf -y module install nodejs:12
```

1.2.2 Ablagestruktur

Listing 12: Anlegen der Verzeichnisstruktur.

```
elbrus@server:~$ sudo mkdir /var/elbrus
elbrus@server:~$ sudo chown -R elbrus:elbrus /var/elbrus
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ mkdir shared keys
elbrus@server:~/var/elbrus$ chmod -R 777 /var/elbrus/shared
```

1.3 Git

Listing 13: Installieren von dem VCS 'git'.

```
elbrus@server:~$ sudo yum install -y git
```

1.3.1 Git - Erstellen der SSH-Keys

Listing 14: Wechseln des Verzeichnisses.

```
elbrus@server:~$ cd /var/elbrus/keys
```

Listing 15: Erstellen des SSH-keys der für das Herunterladen der 'Database' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f database_key -q -N ""
```

Listing 16: Erstellen des SSH-keys der für das Herunterladen des 'Capture-Device' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f capture_device_key -q -N ""
```

Listing 17: Erstellen des SSH-keys der für das Herunterladen des 'Report-Generator' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f \
report_generator_key -q -N ""
```

Listing 18: Erstellen des SSH-keys der für das Herunterladen des 'SNMP-Managers' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f snmp_manager_key -q -N ""
```

Listing 19: Erstellen des SSH-keys der für das Herunterladen des 'SSH-Managers' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f ssh_manager_key -q -N ""
```

Listing 20: Erstellen des SSH-keys der für das Herunterladen des 'Uptime-Monitors' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f uptime_monitor_key -q -N ""
```

Listing 21: Erstellen des SSH-keys der für das Herunterladen des 'geo session finders' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048\
-f geo_session_finder_key -q -N ""
```

Listing 22: Erstellen des SSH-keys der für das Herunterladen der 'API' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f api_key -q -N ""
```

Listing 23: Erstellen des SSH-keys der für das Herunterladen des 'Webinterfaces' benötigt wird.

```
elbrus@server:~/var/elbrus/keys$ ssh-keygen -t rsa -b 2048 -f webinterface_key -q -N ""
```

Bevor mit der Installation vorgefahren werden kann müssen die soeben angelegten SSH-Keys an "keys@Elbrus-Analytics.at" gesendet werden. Bitte beachten Sie, dass Ihre Email-Adresse Sie als berechtigten Nutzer ausweist.

1.3.2 Git - Clonen der Software

Listing 24: Wechseln des Verzeichnisses.

```
elbrus@server:~$ cd /var/elbrus
```

Listing 25: Clonen der Datenbank Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/database.git\
--config core.sshCommand="ssh -i ./keys/database_key"
```

Listing 26: Clonen der 'Capture-Device' Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/capture-device.git\
--config core.sshCommand="ssh -i ./keys/capture_device_key"
elbrus@server:~/var/elbrus$ mkdir capture
elbrus@server:~/var/elbrus$ cp -a capture-device/src/. capture
elbrus@server:~/var/elbrus$ rm -rfd capture-device
```

Listing 27: Clonen der 'Report-Generator' Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/\
report-generator.git --config core.sshCommand="ssh -i ./keys/report_generator_key"
```

Listing 28: Clonen der 'SNMP-Manager' Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/snmp-manager.git\
--config core.sshCommand="ssh -i ./keys/snmp_manager_key"
```

Listing 29: Clonen der 'SSH-Manager' Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/ssh-manager.git\
--config core.sshCommand="ssh -i ./keys/ssh_manager_key"
```

Listing 30: Clonen der 'Uptime-Monitor' Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/api.git\
--config core.sshCommand="ssh -i ./keys/uptime_monitor_key"
```

Listing 31: Clonen 'geo session finders' Software.

```
elbrus@server:~/var/elbrus/keys$ git clone git@github.com:Elbrus-Analytics/\
geo_session_finder.git --config core.sshCommand="ssh -i ./keys/geo_session_finder_key"
```

Listing 32: Clonen der API Software.

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/api.git\
--config core.sshCommand="ssh -i ./keys/api_key"
```

Listing 33: Clonen der Packet-Importer Software

```
elbrus@server:~/var/elbrus$ git clone git@github.com:Elbrus-Analytics/webinterface.git\
--config core.sshCommand="ssh -i ./keys/webinterface_key"
```

1.4 Python

1.4.1 1 - Automatische Installation

Listing 34: Ausführen des 'pythonSourceInstall.sh' Scripts.

```
elbrus@server:~/var/elbrus$ sudo bash report-generator/pythonSourceInstall.sh
```

1.4.2 2 - Manuel Installation

Listing 35: Installieren von benötigten Paketen und Abhängigkeiten.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ sudo dnf install gcc openssl-devel bzip2-devel\
libffi-devel zlib-devel wget make -y
```

Listing 36: Herunterladen der Source Datei.

```
elbrus@server:~/var/elbrus$ wget https://www.python.org/ftp/python/\
3.10.0/Python-3.10.0.tar.xz
```

Listing 37: Extrahieren der installierten Datei.

```
elbrus@server:~/var/elbrus$ tar -xf Python-3.10.2.tar.xz
```

Listing 38: Wechseln zu source Verzeichniss. Und ausführen des Konfigurations Scripts.

```
elbrus@server:~/var/elbrus$ cd Python-3.10.0 && ./configure --enable-optimizations
```

Listing 39: Starten des build Prozesses.

```
elbrus@server:~/var/elbrus/Python-3.10.0$ cd make -j $(nproc)
```

Listing 40: Installieren von Python.

```
elbrus@server:~/var/elbrus/Python-3.10.0$ sudo make install
```

Listing 41: Löschen der komprimierten Python Datei.

```
elbrus@server:~/var/elbrus/Python-3.10.0$ cd .. && rm Python-3.10.0.tar.xz
```


1.4.3 Upgrade von 'pip'

Listing 42: Upgraden von 'pip'.

```
elbrus@server:~$ /usr/local/bin/python3.10 -m pip install --upgrade pip
```

1.5 Rust

Listing 43: Installieren von GNU Compiler Collection.

```
elbrus@server:~$ sudo dnf install gcc -y
```

Listing 44: Installieren von Rust.

```
elbrus@server:~$ curl --proto '=https' --tlsv1.2 -sSf \
https://sh.rustup.rs/ | sh
...
default host triple: x86_64-unknown-linux-gnu
default toolchain: stable (default)
profile: default
modify PATH variable: yes

1) Proceed with installation (default)
2) Customize installation
3) Cancel installation
>1
...
stable-x86_64-unknown-linux-gnu installed - rustc 1.62.1 (e092d0b6b 2022-07-16)

Rust is installed now. Great!

To get started you may need to restart your current shell.
This would reload your PATH environment variable to include
Cargo's bin directory ($HOME/.cargo/bin).

To configure your current shell, run:
source "$HOME/.cargo/env"
elbrus@server:~$
```

Listing 45: Laden der Variablen aus dem Terminal Profil.

```
elbrus@server:~$ source ~/.profile
```

Listing 46: Hinzufügen des Befehls Cargo zu dem Pfad.

```
elbrus@server:~$ source ~/.cargo/env
```

2 Datenbank

2.1 Voraussetzungen

Listing 47: Hinzufügen des PostgreSQL Drittanbieter-Repository, um die neuesten PostgreSQL-Pakete zu erhalten.

```
elbrus@server:~$ sudo yum install \
https://download.postgresql.org/pub/repos/yum/reporpms/\
EL-$(rpm -E %{rhel})-x86_64/pgdg-redhat-repo-latest.noarch.rpm
```

Listing 48: Erstellen des Timescale repository.

```
elbrus@server:~$ sudo tee /etc/yum.repos.d/timescale_timescaledb.repo <<EOL
[timescale_timescaledb]
name=timescale_timescaledb
baseurl=https://packagecloud.io/timescale/timescaledb/el/$(rpm -E %{rhel})/\$basearch
repo_gpgcheck=1
gpgcheck=0
enabled=1
gpgkey=https://packagecloud.io/timescale/timescaledb/gpgkey
sslverify=1
sslcert=/etc/pki/tls/certs/ca-bundle.crt
metadata_expire=300
EOL
```

Listing 49: Updaten der lokalen Package-Liste.

```
elbrus@server:~$ sudo yum update -y
```

Listing 50: Installieren von TimescaleDB.

```
elbrus@server:~$ sudo dnf -qy module disable postgresql
elbrus@server:~$ sudo dnf install postgresql14 postgresql14-server -y
elbrus@server:~$ sudo dnf install timescaledb-2-postgresql-14 -y
```

2.2 Umgebung Konfigurieren

Listing 51: Initialisieren der Datenbank.

```
elbrus@server:~$ sudo /usr/pgsql-14/bin/postgresql-14-setup initdb
```

Listing 52: Verknüpfen von 'postgresql' Service Start mit Serverstart sowie den Service starten.

```
elbrus@server:~$ sudo systemctl enable postgresql-14
elbrus@server:~$ sudo systemctl start postgresql-14
```

Listing 53: /var/lib/pgsql/14/data/postgresql.conf - Ändern der folgenden Zeilen.

```
- #shared_preload_libraries = ''
+ shared_preload_libraries = 'timescaledb'

- #listen_addresses = 'localhost'
+ listen_addresses = '*'
```

Listing 54: /var/lib/pgsql/14/data/pg_hba.conf - Ändern der folgenden Zeilen.

#	TYPE	DATABASE	USER	ADDRESS	METHOD
+	host	elbrus	elbrus	0.0.0.0/0	trust

Listing 55: Anpassen der Datenbank Einstellungen auf die Server Hardware.

```
elbrus@server:~$ sudo timescaledb-tune --pg-config=/usr/\
pgsql-14/bin/pg_config --yes
```

Listing 56: Neustarten des Services um Änderungen zu übernehmen.

```
elbrus@server:~$ sudo systemctl restart postgresql-14
```

2.3 Erstellen der Elbrus-Datenbank

Listing 57: Verbinden mit dem interaktiven Terminal von 'postgres'.

```
elbrus@server:~$ sudo su postgres -c psql
```

Im folgenden Text sind markierte Abschnitte Variablen, welche im darunterliegenden SQL geändert werden können, was aus Sicherheitsgründen dringend empfohlen wird.

1. Die Datenbank elbrus anlegen
2. Die Zeitzone auf Europe/Vienna setzen
3. Den User elbrus mit dem Passwort elbrus123! anlegen
4. Dem User alle rechte auf die vorher erstellte Datenbank geben

Listing 58: Ausführen von SQL Befehlen.

```
CREATE DATABASE elbrus;  
ALTER DATABASE elbrus SET timezone TO 'Europe/Vienna';  
CREATE USER elbrus PASSWORD 'elbrus123!';  
GRANT ALL ON DATABASE elbrus TO elbrus;
```

Listing 59: Wechseln zu erstellter Datenbank.

```
\c elbrus
```

Listing 60: Hinzufügen der TimescaleDB Erweiterung.

```
CREATE EXTENSION IF NOT EXISTS timescaledb;  
exit
```

Listing 61: Anlegen der benötigten Tabellen durch das ausführen von 'init.sql'.

```
elbrus@server:~/var/elbrus$ psql -U elbrus -d elbrus -f \  
database/sql/init.sql
```

3 Globale Konfiguration

Listing 62: Anhand von '.config.example' eigene '.config' Datei in '/var/elbrus/shared' anlegen.

```
1  #database settings
2  DB_HOST=localhost
3  DB_PORT=5432
4  DB_NAME=elbrus
5  DB_USER=elbrus
6  DB_PASSWORD=elbrus123!
7
8  #paths
9  PCAPFOLDER=/var/elbrus/shared/traces
10 IMPORTERPATH=/var/elbrus/pcap-importer/pcap-importer
11 REPORTERPATH=/var/elbrus/report-generator/src/main.py
```

```
elbrus@server:~/var/elbrus$ sudo chown elbrus:elbrus /var/elbrus/shared/.config
elbrus@server:~/var/elbrus$ sudo chmod 776 /var/elbrus/shared/.config
```

4 Aufzeichnen der Daten

4.1 Voraussetzungen

Listing 63: Installieren von 'tcpdump' für das aufzeichnen von Daten.

```
elbrus@server:~$ sudo dnf install tcpdump
```

Listing 64: Anlegen eines Users der Berechtigungen zum ausführen von 'tcpdump' erhält.

```
elbrus@server:~$ sudo useradd aragog
```

Listing 65: Hinzufügen von User 'aragog' zu Gruppe 'elbrus'.

```
elbrus@server:~$ sudo usermod -aG elbrus aragog
```

Listing 66: Zuweisen von 'tcpdump' zu der Gruppe 'aragog'.

```
elbrus@server:~$ sudo chgrp aragog /usr/sbin/tcpdump
```

Listing 67: Ändern der Berechtigungen auf 'tcpdump'.

```
elbrus@server:~$ sudo chmod 750 /usr/sbin/tcpdump
elbrus@server:~$ sudo setcap cap_net_raw,cap_net_admin=eip \
/usr/sbin/tcpdump
```

Listing 68: Wechseln des Owners & der Berechtigung auf '/var/elbrus/capture/'

```
elbrus@server:~$ sudo chown -R aragog:aragog /var/elbrus/capture/
elbrus@server:~$ sudo chmod -R 770 /var/elbrus/capture/
elbrus@server:~$ sudo chmod 777 /var/elbrus/capture/
```

```
elbrus@server:~/var/elbrus$ sudo chmod 777 /var/elbrus/capture/install.sh
```

4.2 Umgebung Konfigurieren

4.2.1 1 - Mit Setup Script

Listing 69: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~/var/elbrus$ bash capture/install.sh
Do you want to proceed with setup of the 'capture-device'? (y/n) y

Where should the log be stored (dir) [/var/elbrus/shared/log]:
Where is the elb-capture-postrotate.sh stored [/var/elbrus/capture/elb-capture-
postrotate.sh]:
Where is the shared config stored [/var/elbrus/shared/.config]:

Should the log be stored at '/var/elbrus/shared/log' ?
Is the 'elb-capture-postrotate.sh' stored at '/var/elbrus/capture/elb-capture-postrotate
.sh' ?
Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
#global
SHAREDCONFIG=/var/elbrus/shared/.config

#paths
POSTROTATESCRIPT=/var/elbrus/capture/elb-capture-postrotate.sh
LOGFILE=/var/elbrus/shared/log

#settings
TIMEPERCAPTURE=900
MAXFILES=10
INTERFACE=eth0
Cleaning up...
elbrus@server:~/var/elbrus$
```

4.2.2 2 - Ohne Setup Script

Listing 70: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #path
5  POSTROTATESCRIPT=/var/elbrus/capture/elb-capture-postrotate.sh
6  LOGFILEDIR=/var/elbrus/capture/capture"-"$(date +"%Y-%U")".log
7
8  #settings
9  TIMEPERCAPTURE=900
10 MAXFILES=10
11 INTERFACE=eth0
```

4.3 Der Systemd Service

Listing 71: capture.service.example - Die Variable 'WorkingDirectory', Die Variable 'User' sowie die Variable 'ExecStopPost' anpassen.

```
3  ...
4  #job is starting immediatly after the start action has been called
5  Type=simple
6  #the user to execute the script
7  User=aragog
8  #the working directory
9  WorkingDirectory=/var/elbrus/capture
10 #which script should be executed
11 ExecStart=/bin/bash elb-capture.sh
12 #when the script should restart
13 Restart=on-failure
14 #set the restart timeout
15 RestartSec=5
16 #which script should be executed when the service stops
17 ExecStopPost=/bin/bash elb-capture-log.sh
18
19 [Install]
20 ...
```

Listing 72: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp capture/capture.service.example\
/etc/systemd/system/capture.service
```

Listing 73: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 74: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable capture.service
```

Listing 75: Starten des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start capture.service
```


5 Packet Capture Importer

5.1 Umgebung Konfigurieren

5.1.1 1 - Mit Setup Script

Listing 76: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ bash database/importer/pcap-importer/\
install.sh
Do you want to proceed? (y/n) y

Where is the shared config stored [/var/elbrus/shared/.config]:
Where should the 'pcap-importer' (dir) be stored [/var/elbrus/pcap-importer]:

Would you like to store the 'pcap-importer' at '/var/elbrus/pcap-importer' ?
Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
Submodule 'importer/pcap-importer/pcap-analyzer' (https://github.com/rusticata/pcap-
analyzer.git) registered for path 'importer/pcap-importer/pcap-analyzer'
Cloning into '/var/elbrus/database/importer/pcap-importer/pcap-analyzer'...
Submodule path 'importer/pcap-importer/pcap-analyzer': checked out '26
abc0b0f4d9b2f0e6a72a62e694cd60ae6b6011'
Start Building ... (this may take a while)
Compiling proc-macro2 v1.0.38
Compiling unicode-xid v0.2.3
Compiling syn v1.0.93
...
Compiling libpcap-tools v0.1.0 (/var/elbrus/database/importer/pcap-importer/pcap-
analyzer/libpcap-tools)
Compiling tokio-postgres v0.7.6
Compiling pcap-importer v0.1.0 (/var/elbrus/database/importer/pcap-importer)
Finished release [optimized] target(s) in 1m 38s
Cleaning up...
elbrus@server:~/var/elbrus$
```

5.1.2 2 - Ohne Setup Script

Listing 77: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1 #global
2 SHAREDCONFIG=/var/elbrus/shared/.config
```

Listing 78: Updaten der git Submodule.

```
elbrus@server:~/var/elbrus$ git -C database submodule update --init
```

Listing 79: Kompilieren des 'pcap-importers'.

```
elbrus@server:~/var/elbrus$ cargo build --release --manifest-path \
database/importer/pcap-importer/Cargo.toml
```

Listing 80: Kopieren des 'pcap-importers' in ein eigenes Verzeichniss.

```
elbrus@server:~/var/elbrus$ mkdir -p /var/elbrus/pcap-importer
elbrus@server:~/var/elbrus$ mv database/importer/pcap-importer/target/\
release/pcap-importer /var/elbrus/pcap-importer/pcap-importer
```

6 Report Generator

6.1 Umgebung Konfigurieren

6.1.1 1 - Mit Setup Script

Listing 81: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~/var/elbrus$ bash report-generator/install.sh
Do you want to proceed with setup of the 'report-generator'? (y/n) y

Where is the shared config stored [/var/elbrus/shared/.config]:

Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
Install dependencies ...

...

elbrus@server:~/var/elbrus$
```

6.1.2 2 - Ohne Setup Script

Listing 82: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1 #global
2 SHAREDCONFIG=/var/elbrus/shared/.config
```

Listing 83: Installieren von fehlenden python3 Packages.

```
elbrus@server:~/var/elbrus$ pip3 install -r \
report-generator/requirements.txt
```

6.2 Der Systemd Service

Listing 84: snmp-manager.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
5  ...
6  #job is starting immediatly after the start action has been called
7  Type=simple
8  #the user to execute the script
9  User=elbrus
10 #the working directory
11 WorkingDirectory=/var/elbrus/report-generator/src/
12 #which script should be executed
13 ExecStart=python3 main.py
14 ...
```

Listing 85: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp report-generator/src/report-generator.service\
.example /etc/systemd/system/report-generator.service
```

Listing 86: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp snmp-manager/src/report-generator-schedule.timer\
.example /etc/systemd/system/report-generator-schedule.timer
```

Listing 87: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 88: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable report-generator.service
```

Listing 89: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable report-generator-schedule.timer
```

Listing 90: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start report-generator-schedule.timer
```

7 SNMP Manager

7.1 Umgebung Konfigurieren

7.1.1 1 - Mit Setup Script

Listing 91: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elrbus$ bash snmp-manager/src/install.sh
Do you want to proceed with setup of the 'snmp-manager'? (y/n) y

Where should the log be stored (dir) [/var/elbrus/shared/log]:
Where is the shared config stored [/var/elbrus/shared/.config]:

Should the log be stored at '/var/elbrus/shared/log' ?
Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
#global
SHAREDCONFIG=/var/elbrus/shared/.config

#paths
LOGFILEDIR=/var/elbrus/snmp-manager/log
Install dependencies ...

...

Cleaning up...
elbrus@server:~/var/elrbus/snmp-manager$
```

7.1.2 2 - Ohne Setup Script

Listing 92: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #paths
5  LOGFILEDIR=/var/elbrus/shared/log
```

7.2 Der Systemd Service

Listing 93: snmp-manager.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
5  ...
6  #job is starting immediatly after the start action has been called
7  Type=simple
8  #the user to execute the script
9  User=elbrus
10 #the working directory
11 WorkingDirectory=/var/elbrus/snmp-manager/src
12 #which script should be executed
13 ExecStart=/bin/bash elb-snmp-manager.sh
14 ...
```

Listing 94: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp snmp-manager/src/snmp-manager.service\
.example /etc/systemd/system/snmp-manager.service
```

Listing 95: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp snmp-manager/src/snmp-manager-schedule.timer\
.example /etc/systemd/system/snmp-manager-schedule.timer
```

Listing 96: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 97: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable snmp-manager.service
```

Listing 98: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable snmp-manager-schedule.timer
```

Listing 99: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start snmp-manager-schedule.timer
```

8 SSH Manager

8.1 Umgebung Konfigurieren

8.1.1 1 - Mit Setup Script

Listing 100: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~$ bash ssh-manager/src/install.sh
Do you want to proceed with the setup of the 'ssh-manager'? (y/n) y
we will proceed

Where do you want the ssh config replies to be stored (dir) [/var/elbrus/
shared/ssh-configs]
Where is the 'main.py' file stored [/var/elbrus/ssh-manager/src/main.py]
Where is the shared config stored [/var/elbrus/shared/.config]

Do you want to store the config files at '/var/elbrus/shared/ssh-configs'?
Is your 'main.py' stored at '/var/elbrus/ssh-manager/src/main.py'?
Is the shared config stored at '/var/elbrus/shared/.config'? (y/n/exit) y
we will proceed

#global
SHAREDCONFIG=/var/elbrus/shared/.config

#values regarding the jumpserver:
#IP, PORT and USER values must be set!
#depending on the usage you can set either:
# -PASS and KEYFILE: the keyfile is used, the pass is interpreted as the
passphrase
# -only KEYFILE: the keyfile is used
# -only PASS: the password is used as is regular credentials
JUMPSERVER_IP=
JUMPSERVER_PORT=
JUMPSERVER_USER=
JUMPSERVER_PASS=
SSH_KEYFILE=

#paths
CONFIGPATH=/var/elbrus/shared/ssh-configs
MAINPATH=/var/elbrus/ssh-manager/src/main.py

Do you want to run the setup script? (y/n/exit) y
...
Initialized empty Git repository in /var/elbrus/shared/ssh-configs/.git/
info: created config folder!
Install dependencies ...
...
Cleaning up...
elbrus@server:~/ssh-manager$
```

Listing 101: Ergänzen der fehlenden Werten in '.env'.

```
1  #values regarding the jumpserver:
2  #IP, PORT and USER values must be set!
3  #depending on the usage you can set either:
4  #   -PASS and KEYFILE: the keyfile is used, the pass is interpreted as the
   passphrase
5  #   -only KEYFILE: the keyfile is used
6  #   -only PASS: the password is used as is regular credentials
7  JUMPSERVER_IP=
8  JUMPSERVER_PORT=
9  JUMPSERVER_USER=
10 JUMPSERVER_PASS=
11 SSH_KEYFILE=
```

8.1.2 2 - Ohne Setup Script

Listing 102: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #values regarding the jumpserver:
5  #IP, PORT and USER values must be set!
6  #depending on the usage you can set either:
7  #   -PASS and KEYFILE: the keyfile is used, the pass is interpreted as the
   passphrase
8  #   -only KEYFILE: the keyfile is used
9  #   -only PASS: the password is used as is regular credentials
10 JUMPSERVER_IP=
11 JUMPSERVER_PORT=
12 JUMPSERVER_USER=
13 JUMPSERVER_PASS=
14 SSH_KEYFILE=
15
16 #paths
17 CONFIGPATH=/var/elbrus/shared/ssh-configs
18 MAINPATH=/var/elbrus/ssh-manager/src/main.py
```

Listing 103: Ausführen des Scripts zur Initialisierung des VCS Verzeichnisses.

```
elbrus@server:~/var/elbrus/ssh-manager$ bash src/setup.sh
```

Listing 104: Installieren von fehlenden python3 Packages.

```
elbrus@server:~/var/elbrus/ssh-manager$ pip3 install -r requirements.txt
```


8.2 Der Systemd Service

Listing 105: ssh-manager.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
5  ...
6  #job is starting immediatly after the start action has been called
7  Type=simple
8  #the user to execute the script
9  User=elbrus
10 #the working directory
11 WorkingDirectory=/var/elbrus/ssh-manager/src/
12 #which script should be executed
13 ExecStart=/bin/bash routine.sh
14 ...
```

Listing 106: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp ssh-manager/src/ssh-manager.service.example\
/etc/systemd/system/ssh-manager.service
```

Listing 107: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp ssh-manager/src/ssh-manager-schedule.timer.example\
/etc/systemd/system/ssh-manager-schedule.timer
```

Listing 108: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 109: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable ssh-manager.service
```

Listing 110: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable ssh-manager-schedule.timer
```

Listing 111: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start ssh-manager-schedule.timer
```

9 Uptime Monitor

9.1 Umgebung Konfigurieren

9.1.1 1 - Mit Setup Script

Listing 112: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~$ bash uptime_monitor/install.sh
Do you want to proceed with the setup of the 'uptime_monitor'? (y/n) y
we will proceed

Where is the shared config stored [/var/elbrus/shared/.config]

Is the shared config stored at '/var/elbrus/shared/.config'? (y/n/exit) y
we will proceed

#global
SHAREDCONFIG=/var/elbrus/shared/.config

#config
INITIALPING=1
STATISTICPING=10
Cleaning up...
elbrus@server:~$
```

9.1.2 2 - Ohne Setup Script

Listing 113: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #config
5  # Initial pings to see if device is alive
6  INITIALPING=1
7  # Pings to get the availability statistic
8  STATISTICPING=10
```

9.2 Der Systemd Service

Listing 114: uptime_monitor.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
5  ...
6  #job is starting immediatly after the start action has been called
7  Type=simple
8  #the user to execute the script
9  User=elbrus
10 #the working directory
11 WorkingDirectory=/var/elbrus/uptime_monitor
12 #which script should be executed
13 ExecStart=/bin/bash uptime_monitor.sh
14 ...
```

Listing 115: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp uptime_monitor/uptime_monitor.service.example\
/etc/systemd/system/uptime_monitor.service
```

Listing 116: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp uptime_monitor/uptime_monitor-schedule.timer.example\
/etc/systemd/system/uptime_monitor-schedule.timer
```

Listing 117: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 118: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable uptime_monitor.service
```

Listing 119: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable uptime_monitor-schedule.timer
```

Listing 120: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start uptime_monitor-schedule.timer
```

10 Geo Session finder

10.1 Umgebung Konfigurieren

10.1.1 1 - Mit Setup Script

Listing 121: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~$ bash geo_session_finder/src/install.sh
Do you want to proceed with setup of the 'geo session finder'? (y/n) y

Where should the log be stored (dir) [/var/elbrus/shared/log]:
Where is the shared config stored [/var/elbrus/shared/.config]:

Should the log be stored at '/var/elbrus/shared/log' ?
Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
#global
SHAREDCONFIG=/var/elbrus/shared/.config

#paths
LOGFILEDIR=/var/elbrus/shared/log
Install dependencies ...

...

elbrus@server:~$
```

10.1.2 2 - Ohne Setup Script

Listing 122: Installieren der Abhängigkeiten.

```
elbrus@server:~$ pip3 install -r geo_session_finder/requirements.txt
```

Listing 123: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #paths
5  LOGFILEDIR=/var/elbrus/shared/log
```

10.2 Der Systemd Service

Listing 124: uptime_monitor.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
5  ...
6  #job is starting immediatly after the start action has been called
7  Type=simple
8  #the user to execute the script
9  User=elbrus
10 #the working directory
11 WorkingDirectory=/var/elbrus/geo_session_finder/src
12 #which script should be executed
13 ExecStart=/bin/bash elb-geo-session-finder.sh
14 ...
```

Listing 125: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp geo_session_finder/src/geo-session-finder\
.service.example /etc/systemd/system/geo-session-finder.service
```

Listing 126: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp geo_session_finder/src/geo-session-finder-schedule\
.timer.example /etc/systemd/system/geo-session-finder-schedule.timer
```

Listing 127: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 128: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable geo-session-finder.service
```

Listing 129: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable geo-session-finder-schedule.timer
```

Listing 130: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start geo-session-finder-schedule.timer
```

11 office365

11.1 Umgebung Konfigurieren

11.1.1 1 - Mit Setup Script

Listing 131: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~$ bash install.sh
Do you want to proceed with setup of the 'office365-analyzer'? (y/n) y

Where should the log be stored (dir) [/var/elbrus/shared/log]:
Where is the shared config stored [/var/elbrus/shared/.config]:

Should the log be stored at '/var/elbrus/shared/log' ?
Is the shared config stored at '/var/elbrus/shared/.config' ? (y/n/exit) y
#global
SHAREDCONFIG=/var/elbrus/shared/.config

#paths
LOGFILEDIR=/var/elbrus/shared/log

#ms url
MS_URL=https://endpoints.office.com/endpoints/worldwide?clientrequestid=b10c5ed1-bad1-445f-b386-b919946339a7
Install dependencies ...

...

elbrus@server:~$
```

11.1.2 2 - Ohne Setup Script

Listing 132: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  #global
2  SHAREDCONFIG=/var/elbrus/shared/.config
3
4  #paths
5  LOGFILEDIR=/var/elbrus/shared/log
6
7  #ms url
8  MS_URL=https://endpoints.office.com/endpoints/worldwide?clientrequestid=
   b10c5ed1-bad1-445f-b386-b919946339a7
```

11.2 Der Systemd Service

Listing 133: uptime_monitor.service.example - Die Variable 'WorkingDirectory' sowie die Variable 'User' anpassen.

```
4  ...
5  #job is starting immediatly after the start action has been called
6  Type=simple
7  #the user to execute the script
8  User=elbrus
9  #the working directory
10 WorkingDirectory=/var/elbrus/office365-analyzer/src
11 #which script should be executed
12 ExecStart=/bin/bash elb-office365-get-endpoints.sh
13 ...
```

Listing 134: Kopieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp office365-analyzer/src/office365-get-endpoints\
.service.example /etc/systemd/system/office365-get-endpoints.service
```

Listing 135: Kopieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo cp office365-analyzer/src/office365-get-endpoints\
-schedule.timer.example /etc/systemd/system/office365-get-endpoints-schedule.timer
```

Listing 136: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~/var/elbrus$ sudo systemctl daemon-reload
```

Listing 137: Aktivieren des Serviceprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable office365-get-endpoints.service
```

Listing 138: Aktivieren des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl enable office365-get-endpoints-schedule.timer
```

Listing 139: Starten des Zeitplanungsprogrammes.

```
elbrus@server:~/var/elbrus$ sudo systemctl start office365-get-endpoints-schedule.timer
```

12 API

12.1 Voraussetzungen

Listing 140: Installieren von 'pm2'.

```
elbrus@server:~/var/elbrus$ sudo npm install -g pm2
```

Listing 141: Nachinstallieren der Abhängigkeiten.

```
elbrus@server:~/var/elbrus$ cd api  
elbrus@server:~/var/elbrus/api$ sudo npm install
```


12.2 Umgebung Konfigurieren

Listing 142: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
1  # Application Name
2  APP_NAME=Elbrus-API
3
4  # Port number
5  PORT=3000
6
7  # BASE URL
8  BASE=https://localhost:3000
9
10 # URL of DB
11 DB_USER=
12 DB_HOST=
13 DB_DATABASE=
14 DB_PASSWORD=
15 DB_PORT=
16
17 # JWT
18 JWT_SECRET=thisisasamplesecret
19 JWT_ACCESS_EXPIRATION_MINUTES=30
20 JWT_REFRESH_EXPIRATION_DAYS=30
21
22 # SMTP configuration options for the email service
23 SMTP_HOST=
24 SMTP_PORT=
25 SMTP_USERNAME=
26 SMTP_PASSWORD=
27 EMAIL_FROM=
28 EMAIL_NAME=
```

12.3 Inbetriebnahme

Listing 143: Starten der API.

```
elbrus@server:~/var/elbrus/api$ pm2 start ecosystem.config.json
```

Die API läuft in folge automatisch im Hintergrund.

1. **APP_NAME** wird rein als beschreibender Name genutzt und kann so belassen werden.
2. **PORT** beschreibt den TCP Port auf dem die Applikation laufen soll.
3. **BASE** ist der Wert der Basis URL auf welche zugegriffen wird. Hier muss der Port auch angegeben werden!
4. **DB_USER** ist der benutzername des DBMS Benutzers, über welchen der Zugriff auf die Datenbank läuft.
5. **DB_HOST** ist der hostname/ip-adresse des Servers welcher die Datenbank hostet.
6. **DB_DATABASE** beschreibt den Namen der Datenbank selber.
7. **DB_PASSWORD** ist das Passwort des DBMS Benutzers, über welchen der Zugriff auf die Datenbank läuft.
8. **DB_PORT** ist der TCP Port des Servers welcher die Datenbank hostet.
9. **JWT_SECRET** ist das Passwort mit dem alle JWT Tokens ausgestellt werden.
10. **JWT_ACCESS_EXPIRATION_MINUTES** gibt die Dauer der Gültigkeit eines Access-Tokens an (in Minuten)
11. **JWT_REFRESH_EXPIRATION_DAYS** gibt die Dauer der Gültigkeit eines Refresh-Tokens an (in Tagen)
12. **SMTP_HOST** ist der hostname/ip-adresse des EMail Servers
13. **SMTP_PORT** ist der TCP Port des EMail Servers für SMTP
14. **SMTP_USERNAME** ist der username des Benutzers zum einloggen in den EMail Account
15. **SMTP_PASSWORD** ist das passwort des Benutzers zum einloggen in den EMail Account
16. **EMAIL_FROM** gibt die Email adresse an, von welcher gesendet werden soll.
17. **EMAIL_NAME** gibt den Namen an, welcher dem Empfänger angezeigt werden soll.

13 Webinterface