

# Elbrus Analytics - Bereitstellungshandbuch

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# 1 Server Infrastruktur

## 1.1 Initiale Server Konfiguration

Listing 1: Setzen der Zeitzone auf 'Europa/Wien'.

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

Listing 2: Installieren von dem 'firewalld' Service.

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

## 1.2 Git

Listing 3: Installieren von dem VCS 'git'.

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

## 1.3 Ablagestruktur

Listing 4: Anlegen der Verzeichnisstruktur.

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

## 1.4 Node.Js

Listing 5: Installieren des Frameworks 'Node.Js'.

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

## 1.5 globale Konfiguration

Listing 6: Anhand von '.config.example' eigene '.config' Datei in '/var/elbrus/shared' anlegen.

```
1  #database settings
2  DB_HOST=10.0.76.220
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
```

## 1.6 Python

### 1.6.1 1 - Automatische Installation

Listing 7: Kopieren des Github Repositorys 'report-generator'.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/report-generator.git
```

Listing 8: Ausführen des 'pythonSourceInstall.sh' Scripts.

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

### 1.6.2 2 - Manuel Installation

Listing 9: Installieren von benötigten Paketen und Abhängigkeiten.

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

Listing 10: Extrahieren der installierten Dateien.

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

Listing 11: Wechseln zu source Verzeichniss. Und ausführen des Konfigurations Scripts.

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

Listing 12: Starten des build Prozesses.

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

Listing 13: Installieren von Python.

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

### 1.6.3 Upgrade von 'pip'

Listing 14: Upgraden von 'pip'.

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

## 1.7 Rust

Listing 15: Installieren von GNU Compiler Collection.

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

Listing 16: 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 17: Laden der Variablen aus dem Terminal Profil.

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

Listing 18: Hinzufügen des Befehls Cargo zu dem Pfad.

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

## 1.8 SSH-Keys

Weil der pcap-importer und der report-generator auf zwei verschiedenen Server liegen könnten, muss für die Kommunikation zwischen jenen Server SSH-Funktionieren.

Dieser Schritt kann übersprungen werden wenn alles auf einem Server installiert wird.

### 1.8.1 Capture-Server

Listing 19: Anlegen der SSH-Keys.

```
elbrus@server:~$ mkdir -p /var/elbrus/shared/.ssh/  
elbrus@server:~$ ssh-keygen -t ecdsa -b 256 -f \  
/var/elbrus/shared/.ssh/id_report_generator_connection -N ''
```

Listing 20: Übertragen der SSH-Keys auf den Database-Server.

```
elbrus@server:~$ ssh-copy-id -i \  
/var/elbrus/shared/.ssh/id_report_generator_connection.pub \  
elbrus@10.0.76.220
```

### 1.8.2 Database-Server

Listing 21: Anlegen der SSH-Keys.

```
elbrus@server:~$ mkdir -p /var/elbrus/shared/.ssh/  
elbrus@server:~$ ssh-keygen -t ecdsa -b 256 -f \  
/var/elbrus/shared/.ssh/id_capture_connection -N ''
```

Listing 22: Übertragen der SSH-Keys auf den Capture-Server.

```
elbrus@server:~$ ssh-copy-id -i \  
/var/elbrus/shared/.ssh/id_capture_connection.pub \  
elbrus@10.0.76.217
```

## 2 Datenbank

### 2.1 Voraussetzungen

Listing 23: 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 24: Erstellen und bearbeiten 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
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
metadata_expire=300
EOL
```

Listing 25: Updaten der lokalen Package-Liste.

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

Listing 26: 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 27: Initialisieren der Datenbank.

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

Listing 28: 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 29: var/lib/pgsql/14/data/postgresql.conf - Ändern der folgenden Zeilen.

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

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

Listing 30: var/lib/pgsql/14/data/postgresql.conf - Ändern der folgenden Zeilen.

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

Listing 31: Anpassen der Datenbank Einstellungen auf die Server Hardware.

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

Listing 32: Neustarten des Services um Änderungen zu übernehmen.

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



## 2.3 Erstellen der Elbrus-Datenbank

Listing 33: 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 34: 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 35: Wechseln zu erstellter Datenbank.

```
\c elbrus
```

Listing 36: Hinzufügen der TimescaleDB Erweiterung.

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

## 2.4 Installation

Listing 37: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/database.git
```

Listing 38: 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 Aufzeichnen der Daten

### 3.1 Voraussetzungen

Listing 39: Installieren von 'tcpdump' für das aufzeichnen von Daten.

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

Listing 40: Anlegen eines Users der Berechtigungen zum ausführen von 'tcpdump' erhält.

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

Listing 41: Zuweisen von 'tcpdump' zu der Gruppe 'aragog'.

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

Listing 42: Ändern der Berechtigungen auf 'tcpdump'.

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

### 3.2 Installation

Listing 43: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/capture-device.git
elbrus@server:~/var/elbrus$ mkdir capture
elbrus@server:~/var/elbrus$ cp capture-device/src/* capture
elbrus@server:~/var/elbrus$ rm -rf capture-device
```

## 3.3 Umgebung Konfigurieren

### 3.3.1 1 - Mit Setup Script

Listing 44: 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$
```

### 3.3.2 2 - Ohne Setup Script

Listing 45: 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
```

### 3.4 Der Systemd Service

Listing 46: 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 47: Kopieren des Serviceprogrammes.

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

Listing 48: Neuladen des 'systemctl' Deamons.

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

Listing 49: Aktivieren des Serviceprogrammes.

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

Listing 50: Starten des Serviceprogrammes.

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

## 4 Packet Capture Importer

### 4.1 Installation

Listing 51: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/database.git
```

### 4.2 Umgebung Konfigurieren

#### 4.2.1 1 - Mit Setup Script

Listing 52: 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$
```

## 4.2.2 2 - Ohne Setup Script

Listing 53: Anhand von '.env.example' eigene '.env' Datei anlegen.

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

Listing 54: Updaten der git Submodule.

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

Listing 55: Kompilieren des 'pcap-importers'.

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

Listing 56: 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
```

## 5 Report Generator

### 5.1 Installation

Listing 57: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/report-generator.git
```

### 5.2 Umgebung Konfigurieren

#### 5.2.1 1 - Mit Setup Script

Listing 58: 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$
```

#### 5.2.2 2 - Ohne Setup Script

Listing 59: Anhand von '.env.example' eigene '.env' Datei anlegen.

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

Listing 60: Installieren von fehlenden python3 Packages.

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



## 6 SNMP Manager

### 6.1 Installation

Listing 61: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/snmp-manager.git
```

### 6.2 Umgebung Konfigurieren

#### 6.2.1 1 - Mit Setup Script

Listing 62: Ausführen des 'install.sh' Scripts.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ 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/elbrus/snmp-manager$
```

#### 6.2.2 2 - Ohne Setup Script

Listing 63: Anhand von '.env.example' eigene '.env' Datei anlegen.

```
17 #global
18 SHAREDCONFIG=/var/elbrus/shared/.config
19
20 #paths
21 LOGFILEDIR=/var/elbrus/shared/log
```

## 6.3 Der Systemd Service

Listing 64: 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 65: Kopieren des Serviceprogrammes.

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

Listing 66: Kopieren des Zeitplanungsprogrammes.

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

Listing 67: Neuladen des 'systemctl' Deamons.

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

Listing 68: Aktivieren des Serviceprogrammes.

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

Listing 69: Aktivieren des Zeitplanungsprogrammes.

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

Listing 70: Starten des Zeitplanungsprogrammes.

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

## 7 SSH Manager

### 7.1 Installation

Listing 71: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/ssh-manager.git
```

### 7.2 Umgebung Konfigurieren

#### 7.2.1 1 - Mit Setup Script

Listing 72: 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 73: 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=
```

## 7.2.2 2 - Ohne Setup Script

Listing 74: 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 75: Ausführen des Scripts zur Initialisierung des VCS Verzeichnisses.

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

Listing 76: Installieren von fehlenden python3 Packages.

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

## 7.3 Der Systemd Service

Listing 77: 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 78: Kopieren des Serviceprogrammes.

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

Listing 79: Kopieren des Zeitplanungsprogrammes.

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

Listing 80: Neuladen des 'systemctl' Deamons.

```
elbrus@server:~$ systemctl daemon-reload
```

Listing 81: Aktivieren des Serviceprogrammes.

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

Listing 82: Aktivieren des Zeitplanungsprogrammes.

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

Listing 83: Starten des Zeitplanungsprogrammes.

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

## 8 API

### 8.1 Installation

Listing 84: Clonen der Software von GitHub.

```
elbrus@server:~$ cd /var/elbrus
elbrus@server:~/var/elbrus$ git clone https://github.com/\
Elbrus-Analytics/api.git
elbrus@server:~/var/elbrus$ cd api
elbrus@server:~/var/elbrus/api$
```

### 8.2 Voraussetzungen

Listing 85: Nachinstallieren der Abhängigkeiten.

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

Listing 86: Installieren von 'pm2'.

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

## 8.3 Umgebung Konfigurieren

Listing 87: 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=
```

## 8.4 Inbetriebnahme

Listing 88: 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.



## 9 Webinterface