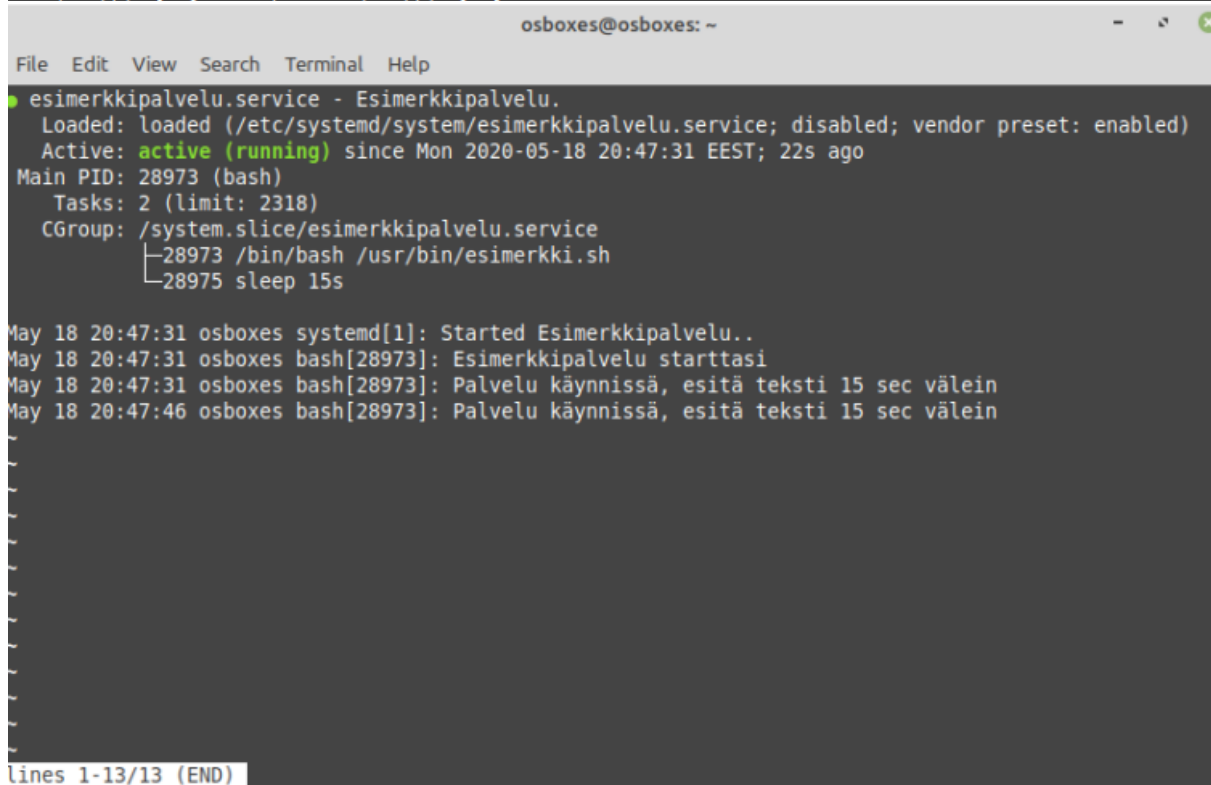


1.

```
osboxes@osboxes:~$ sudo gedit /usr/bin/palvelu.sh
[sudo] password for osboxes:
sudo: gedit: command not found
osboxes@osboxes:~$ man gedit
No manual entry for gedit
osboxes@osboxes:~$ sudo touch /usr/bin/palvelu.sh
osboxes@osboxes:~$ clear
osboxes@osboxes:~$ nano usr/bin/esimerkki.sh
osboxes@osboxes:~$ nano /usr/bin/esimerkki.sh
osboxes@osboxes:~$
osboxes@osboxes:~$ sudo nano /usr/bin/esimerkki.sh
osboxes@osboxes:~$ chmod +x /usr/bin/esimerkkki.sh
chmod: cannot access '/usr/bin/esimerkkki.sh': No such file or directory
osboxes@osboxes:~$ sudo chmod +x /usr/bin/esimerkkki.sh
chmod: cannot access '/usr/bin/esimerkkki.sh': No such file or directory
osboxes@osboxes:~$ sudo chmod +x usr/bin/esimerkkki.sh
chmod: cannot access 'usr/bin/esimerkkki.sh': No such file or directory
osboxes@osboxes:~$ sudo chmod +x /usr/bin/esimerkki.sh
osboxes@osboxes:~$
osboxes@osboxes:~$
osboxes@osboxes:~$ sudo nano /etc/systemd/system/esimerkkipalvelu.service
osboxes@osboxes:~$ sudo chmod 644 /etc/systemd/system/esimerkkipalvelu.service
osboxes@osboxes:~$ sudo systemctl start esimerkkipalvelu
osboxes@osboxes:~$ sudo systemctl status esimerkkipalvelu
```



```
osboxes@osboxes: ~
File Edit View Search Terminal Help
● esimerkkipalvelu.service - Esimerkkipalvelu.
   Loaded: loaded (/etc/systemd/system/esimerkkipalvelu.service; disabled; vendor preset: enabled)
   Active: active (running) since Mon 2020-05-18 20:47:31 EEST; 22s ago
 Main PID: 28973 (bash)
    Tasks: 2 (limit: 2318)
   CGroup: /system.slice/esimerkkipalvelu.service
           └─28973 /bin/bash /usr/bin/esimerkki.sh
             └─28975 sleep 15s

May 18 20:47:31 osboxes systemd[1]: Started Esimerkkipalvelu..
May 18 20:47:31 osboxes bash[28973]: Esimerkkipalvelu starttasi
May 18 20:47:31 osboxes bash[28973]: Palvelu käynnissä, esitä teksti 15 sec välein
May 18 20:47:46 osboxes bash[28973]: Palvelu käynnissä, esitä teksti 15 sec välein
...
lines 1-13/13 (END)
```

## 2.

```
osboxes@osboxes: ~  
File Edit View Search Terminal Help  
osboxes@osboxes:~$ systemctl list-units --type service --state running  
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION  
accounts-daemon.service            loaded active running Accounts Service  
acpid.service                      loaded active running ACPI event daemon  
avahi-daemon.service               loaded active running Avahi mDNS/DNS-SD Stack  
colord.service                     loaded active running Manage, Install and Generate Color Profiles  
cron.service                       loaded active running Regular background program processing daemon  
cups-browsed.service               loaded active running Make remote CUPS printers available locally  
cups.service                       loaded active running CUPS Scheduler  
dbus.service                      loaded active running D-Bus System Message Bus  
esimerkkipalvelu.service           loaded active running Esimerkkipalvelu.  
getty@tty1.service                 loaded active running Getty on tty1  
kerneloops.service                loaded active running Tool to automatically collect and submit kernel crash signatures  
lightdm.service                   loaded active running Light Display Manager  
lvm2-lvmetad.service               loaded active running LVM2 metadata daemon  
ModemManager.service               loaded active running Modem Manager  
networkd-dispatcher.service         loaded active running Dispatcher daemon for systemd-networkd  
NetworkManager.service             loaded active running Network Manager  
packagekit.service                loaded active running PackageKit Daemon  
polkit.service                     loaded active running Authorization Manager  
postfix@.service                   loaded active running Postfix Mail Transport Agent (instance -)  
rsyslog.service                    loaded active running System Logging Service  
rtkit-daemon.service               loaded active running RealtimeKit Scheduling Policy Service  
systemd-journald.service            loaded active running Journal Service  
systemd-logind.service              loaded active running Login Service  
systemd-resolved.service            loaded active running Network Name Resolution  
systemd-timesyncd.service           loaded active running Network Time Synchronization  
systemd-udevd.service               loaded active running udev Kernel Device Manager  
udisks2.service                    loaded active running Disk Manager  
upower.service                     loaded active running Daemon for power management  
user@1000.service                   loaded active running User Manager for UID 1000  
user@1001.service                   loaded active running User Manager for UID 1001  
user@1002.service                   loaded active running User Manager for UID 1002  
uuidd.service                      loaded active running Daemon for generating UUIDs  
wpa_supplicant.service              loaded active running WPA supplicant  
  
LOAD = Reflects whether the unit definition was properly loaded.  
lines 1-36
```

## 3.

rsyslog on enabled ja running. Sen PID on 23610.

rsyslog on turvallinen, tehokas ja tämän myötä myös laajalti käytetty loki ohjelma linux järjestelmille.

```
osboxes@osboxes:~$ systemctl status rsyslog  
● rsyslog.service - System Logging Service  
   Loaded: loaded (/lib/systemd/system/rsyslog.service; enabled; vendor preset: enabled)  
   Active: active (running) since Mon 2020-05-18 18:54:19 EEST; 18h ago  
     Docs: man:rsyslogd(8)  
           http://www.rsyslog.com/doc/  
 Main PID: 23610 (rsyslogd)  
    Tasks: 4 (limit: 2318)  
   CGroup: /system.slice/rsyslog.service  
           └─23610 /usr/sbin/rsyslogd -n  
  
May 18 18:54:19 osboxes systemd[1]: Stopped System Logging Service.  
May 18 18:54:19 osboxes systemd[1]: Starting System Logging Service...  
May 18 18:54:19 osboxes rsyslogd[23610]: imuxsock: Acquired UNIX socket '/run/systemd/journal/syslog' (fd 3) from systemd. [v8.32.0]  
May 18 18:54:19 osboxes rsyslogd[23610]: rsyslogd's groupid changed to 106  
May 18 18:54:19 osboxes systemd[1]: Started System Logging Service.  
May 18 18:54:19 osboxes rsyslogd[23610]: rsyslogd's userid changed to 102  
May 18 18:54:19 osboxes rsyslogd[23610]: [origin software="rsyslogd" swVersion="8.32.0" x-pid="23610" x-info="http://www.rsyslog.com"] start  
osboxes@osboxes:~$
```

4.

```
osboxes@osboxes:~$ sudo systemctl restart rsyslog
[sudo] password for osboxes:
osboxes@osboxes:~$ systemctl status rsyslog
● rsyslog.service - System Logging Service
   Loaded: loaded (/lib/systemd/system/rsyslog.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-05-19 13:23:27 EEST; 3s ago
     Docs: man:rsyslogd(8)
           http://www.rsyslog.com/doc/
   Main PID: 29384 (rsyslogd)
    Tasks: 4 (limit: 2318)
   CGroup: /system.slice/rsyslog.service
           └─29384 /usr/sbin/rsyslogd -n

May 19 13:23:27 osboxes systemd[1]: Starting System Logging Service...
May 19 13:23:27 osboxes rsyslogd[29384]: imuxsock: Acquired UNIX socket '/run/systemd/journal/syslog' (fd 3) from systemd. [v8.32.0]
May 19 13:23:27 osboxes systemd[1]: Started System Logging Service.
May 19 13:23:27 osboxes rsyslogd[29384]: rsyslogd's groupid changed to 106
May 19 13:23:27 osboxes rsyslogd[29384]: rsyslogd's userid changed to 102
May 19 13:23:27 osboxes rsyslogd[29384]: [origin software="rsyslogd" swVersion="8.32.0" x-pid="29384" x-info="http://www.rsyslog.com"] start
osboxes@osboxes:~$
```

5.

PID on 30216, status kertoo onko palvelu aktiivinen, sen PID:n ja lokia palvelun toiminnasta, riippuen mitä ajettava palvelu sisältää.

The screenshot displays a Linux environment with three windows. The top window is a text editor named 'testi.sh' containing a shell script:

```
1 echo "Testi starttaa"
2 while :
3 do
4 [ -d "/home" ] && echo "Directory /home/ exists.";
5 sleep 15s;
6 done
7
```

The bottom-left window is a terminal showing the following commands and output:

```
osboxes@osboxes:~$ sudo systemctl start testi
osboxes@osboxes:~$ systemctl status testi.service
● testi.service - Testi.
   Loaded: loaded (/etc/systemd/system/testi.service; disabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-05-19 13:42:10 EEST; 1s ago
   Main PID: 30216 (bash)
   Tasks: 2 (limit: 2318)
   CGroup: /system.slice/testi.service
           └─30216 /bin/bash /usr/bin/testi.sh
             └─30217 sleep 15s

May 19 13:42:10 osboxes systemd[1]: Started Testi..
May 19 13:42:10 osboxes bash[30216]: Testi starttaa
May 19 13:42:10 osboxes bash[30216]: Directory /home/ exists.
osboxes@osboxes:~$ systemctl status testi.service
● testi.service - Testi.
   Loaded: loaded (/etc/systemd/system/testi.service; disabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-05-19 13:42:10 EEST; 1min 0s ago
   Main PID: 30216 (bash)
   Tasks: 2 (limit: 2318)
   CGroup: /system.slice/testi.service
           └─30216 /bin/bash /usr/bin/testi.sh
             └─30267 sleep 15s

May 19 13:42:10 osboxes systemd[1]: Started Testi..
May 19 13:42:10 osboxes bash[30216]: Testi starttaa
May 19 13:42:10 osboxes bash[30216]: Directory /home/ exists.
May 19 13:42:25 osboxes bash[30216]: Directory /home/ exists.
May 19 13:42:40 osboxes bash[30216]: Directory /home/ exists.
May 19 13:42:55 osboxes bash[30216]: Directory /home/ exists.
May 19 13:43:10 osboxes bash[30216]: Directory /home/ exists.
osboxes@osboxes:~$ sudo nano /etc/systemd/system/testi.service
```

The bottom-right window shows the nano editor editing the file '/etc/systemd/system/testi.service'. The content is as follows:

```
[Unit]
Description=Testi.

[Service]
Type=simple
ExecStart=/bin/bash /usr/bin/testi.sh

[Install]
WantedBy=multi-user.target
```

The nano editor interface includes a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. At the bottom, there are keyboard shortcuts for various actions like 'Get Help', 'Write Out', 'Where Is', 'Cut Text', 'Exit', 'Read File', 'Replace', 'Uncut Text', and 'To'.