jamk.fi

Linux Servers

Labra 2

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K8684
TTV16S3

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Sisältö

1 Systemctl

SSHD:

```
[root@lab1.k8684.local ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2019-11-24 03:00:23 EET; 5min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 3041 (sshd)
   CGroup: /system.slice/sshd.service
           └─3041 /usr/sbin/sshd -D

Nov 24 03:00:23 lab1.k8684.local systemd[1]: Starting OpenSSH server daemon...
Nov 24 03:00:23 lab1.k8684.local sshd[3041]: Server listening on 0.0.0.0 port 22.
Nov 24 03:00:23 lab1.k8684.local sshd[3041]: Server listening on :: port 22.
Nov 24 03:00:23 lab1.k8684.local systemd[1]: Started OpenSSH server daemon.
Nov 24 03:03:58 lab1.k8684.local sshd[3212]: Accepted password for root from 192.168.1.13 port 62778 ssh2
Nov 24 03:05:43 lab1.k8684.local sshd[3257]: Accepted password for root from 192.168.1.13 port 62787 ssh2
```

Network:

```
[root@lab1.k8684.local ~]# systemctl status network
● network.service - LSB: Bring up/down networking
   Loaded: loaded (/etc/rc.d/init.d/network; bad; vendor preset: disabled)
   Active: active (exited) since Sun 2019-11-24 03:00:23 EET; 6min ago
     Docs: man:systemd-sysv-generator(8)
  Process: 2861 ExecStart=/etc/rc.d/init.d/network start (code=exited, status=0/SUCCESS)

Nov 24 03:00:22 lab1.k8684.local systemd[1]: Starting LSB: Bring up/down networking...
Nov 24 03:00:23 lab1.k8684.local network[2861]: Bringing up loopback interface:  [  OK  ]
Nov 24 03:00:23 lab1.k8684.local network[2861]: Bringing up interface enp0s3:  [  OK  ]
Nov 24 03:00:23 lab1.k8684.local systemd[1]: Started LSB: Bring up/down networking.
```

Kdump:

```
[root@lab1.k8684.local ~]# systemctl status kdump
● kdump.service - Crash recovery kernel arming
   Loaded: loaded (/usr/lib/systemd/system/kdump.service; enabled; vendor preset: enabled)
   Active: failed (Result: exit-code) since Sun 2019-11-24 03:00:23 EET; 7min ago
  Process: 3038 ExecStart=/usr/bin/kdumpctl start (code=exited, status=1/FAILURE)
 Main PID: 3038 (code=exited, status=1/FAILURE)

Nov 24 03:00:23 lab1.k8684.local systemd[1]: Starting Crash recovery kernel arming...
Nov 24 03:00:23 lab1.k8684.local kdumpctl[3038]: No memory reserved for crash kernel
Nov 24 03:00:23 lab1.k8684.local systemd[1]: kdump.service: main process exited, code=exited, status=1/FAILURE
Nov 24 03:00:23 lab1.k8684.local kdumpctl[3038]: Starting kdump: [FAILED]
Nov 24 03:00:23 lab1.k8684.local systemd[1]: Failed to start Crash recovery kernel arming.
Nov 24 03:00:23 lab1.k8684.local systemd[1]: Unit kdump.service entered failed state.
Nov 24 03:00:23 lab1.k8684.local systemd[1]: kdump.service failed.
```

"Dot" line with green or red dot, uses color to summarize state. It has 3 possible colors, white, red, green. Green – active/reloading/activating, White – Inactive/deactivating, Red - Failed/Error

Loaded line – shows "loaded" if the unit has been loaded into memory. Other possible values are "error" – if problem occurred during loading, "not-found" – if not unit file was found for unit, "bad-setting" – if an essential unit file setting could not be parsed and " masked" if the unit file has been masked

Active line - shows active state. Value is usually "Active" or " inactive" . Active could mean started, bound, plugged in. Line could also be in process of changing states, displaying values "activating" or "deactivating". State "failed" is entered when the service failed in some way, such as a crash, exiting with an error code or timing out.

Systemctl stop firewalld

```
[root@lab1.k8684.local ~]# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since Sun 2019-11-24 04:38:17 EET; 14s ago
     Docs: man:firewalld(1)
  Process: 2551 ExecStart=/usr/sbin/firewalld --nofork --nopid $FIREWALLD_ARGS (code=exited, status=0/SUCCESS)
 Main PID: 2551 (code=exited, status=0/SUCCESS)

Nov 24 03:00:16 lab1.k8684.local systemd[1]: Starting firewalld - dynamic firewall daemon...
Nov 24 03:00:19 lab1.k8684.local systemd[1]: Started firewalld - dynamic firewall daemon.
Nov 24 04:38:17 lab1.k8684.local systemd[1]: Stopping firewalld - dynamic firewall daemon...
Nov 24 04:38:17 lab1.k8684.local systemd[1]: Stopped firewalld - dynamic firewall daemon.
```

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As we can see, after reboot firewalld is running again, because it is on startup program list. There is a word "enabled" on "Loaded" line, which tells us, if program runs on startup or not.

```
λ ssh root@192.168.1.5
root@192.168.1.5's password:
Last login: Sun Nov 24 03:05:43 2019 from 192.168.1.13
[root@lab1.k8684.local ~]# systemctl status firewalld
● firewalld.service - firewalld - dynamic firewall daemon
   Loaded: loaded (/usr/lib/systemd/system/firewalld.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2019-11-24 04:39:52 EET; 56s ago
     Docs: man:firewalld(1)
 Main PID: 2552 (firewalld)
   CGroup: /system.slice/firewalld.service
           └─2552 /usr/bin/python -Es /usr/sbin/firewalld --nofork --nopid

Nov 24 04:39:48 lab1.k8684.local systemd[1]: Starting firewalld - dynamic firewall daemon...
Nov 24 04:39:52 lab1.k8684.local systemd[1]: Started firewalld - dynamic firewall daemon.
```

Firewall`s process is 2552, according to Main PID output.

2   Yum

Yum has four different command to clean cache

First : yum clean packages – used to clean cached packages

Second: yum clean header – used to purge old package information completely

Third: yum clean metadata – to clean any chached xml metadata from any enable repository

Fourth: yum clean all – to clean all the cached files form any enabled repository at once.

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Cleaning yum cache using "clean all" command.

```
[root@lab1.k8684.local ~]# yum clean all
Loaded plugins: fastestmirror, langpacks
Cleaning repos: base extras updates
Cleaning up list of fastest mirrors
```

Running update:

```
Transaction Summary
================================================================================
Install    1 Package  (+2 Dependent packages)
Upgrade  236 Packages

Total download size: 289 M
Is this ok [y/d/N]: y
```

Allowing packages installation

```
vim-minimal.x86_64 2:7.4.629-6.el7          wget.x86_64 0:1.14-18.el7_6.1
 xfsprogs.x86_64 0:4.5.0-20.el7             yum.noarch 0:3.4.3-163.el7.centos
 yum-plugin-fastestmirror.noarch 0:1.1.31-52.el7   yum-utils.noarch 0:1.1.31-52.el7

Complete!
```

After reboot checking for updates

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```
λ ssh root@192.168.1.5
root@192.168.1.5's password:
Last login: Sun Nov 24 04:40:38 2019 from 192.168.1.13
[root@lab1.k8684.local ~]# yum check-update
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: ftp.funet.fi
 * extras: ftp.funet.fi
 * updates: ftp.funet.fi
[root@lab1.k8684.local ~]#
```

Installing Epel-release (Extra Packages for Enterprise Linux)

```
[root@lab1.k8684.local ~]# yum install epel-release
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: ftp.funet.fi
 * extras: ftp.funet.fi
 * updates: ftp.funet.fi
Resolving Dependencies
--> Running transaction check
---> Package epel-release.noarch 0:7-11 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package              Arch           Version         Repository          Size
================================================================================
Installing:
 epel-release         noarch         7-11            extras              15 k

Transaction Summary
================================================================================
Install  1 Package

Total download size: 15 k
Installed size: 24 k
Is this ok [y/d/N]: y
Downloading packages:
epel-release-7-11.noarch.rpm                               |  15 kB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : epel-release-7-11.noarch                                    1/1
  Verifying  : epel-release-7-11.noarch                                    1/1

Installed:
  epel-release.noarch 0:7-11

Complete!
```

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3   Install Grafana

Added Grafana config file

```
[k8684@lab1.k8684.local yum.repos.d]$ cat grafana.repo
[grafana]
name=grafana
baseurl=https://packages.grafana.com/oss/rpm
repo_gpgcheck=1
enabled=1
gpgcheck=1
gpgkey=https://packages.grafana.com/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
```

Testing repository

```
[k8684@lab1.k8684.local yum.repos.d]$ sudo yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
epel/x86_64/metalink                                                    |  29 kB  00:00:00
 * base: ftp.funet.fi
 * epel: www.nic.funet.fi
 * extras: ftp.funet.fi
 * updates: ftp.funet.fi
epel                                                                    | 5.3 kB  00:00:00
grafana/signature                                                       |  488 B  00:00:00
Retrieving key from https://packages.grafana.com/gpg.key
Importing GPG key 0x24098CB6:
 Userid     : "Grafana <info@grafana.com>"
 Fingerprint: 4e40 ddf6 d76e 284a 4a67 80e4 8c8c 34c5 2409 8cb6
 From       : https://packages.grafana.com/gpg.key
Is this ok [y/N]: y
grafana/signature                                                       | 2.9 kB  00:00:01 !!!
(1/4): epel/x86_64/group_gz                                             |  90 kB  00:00:00
(2/4): epel/x86_64/updateinfo                                           | 1.0 MB  00:00:00
(3/4): grafana/primary_db                                               |  54 kB  00:00:00
(4/4): epel/x86_64/primary_db                                           | 6.9 MB  00:00:02
repo id                          repo name                                              status
base/7/x86_64                    CentOS-7 - Base                                        10,097
epel/x86_64                      Extra Packages for Enterprise Linux 7 - x86_64         13,469
extras/7/x86_64                  CentOS-7 - Extras                                         305
grafana                          grafana                                                  180
updates/7/x86_64                 CentOS-7 - Updates                                        738
repolist: 24,789
```

Installing Grafana

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```
[k8684@lab1.k8684.local yum.repos.d]$ sudo yum install grafana
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: ftp.funet.fi
 * epel: epel.mirror.far.fi
 * extras: ftp.funet.fi
 * updates: ftp.funet.fi
Resolving Dependencies
--> Running transaction check
---> Package grafana.x86_64 0:6.4.4-1 will be installed
--> Processing Dependency: fontconfig for package: grafana-6.4.4-1.x86_64
--> Processing Dependency: urw-fonts for package: grafana-6.4.4-1.x86_64
--> Running transaction check
---> Package fontconfig.x86_64 0:2.13.0-4.3.el7 will be installed
```

```
Installed:
  grafana.x86_64 0:6.4.4-1

Dependency Installed:
  dejavu-fonts-common.noarch 0:2.33-6.el7              dejavu-sans-fonts.noarch 0:2.33-6.el7
  fontconfig.x86_64 0:2.13.0-4.3.el7                   fontpackages-filesystem.noarch 0:1.44-8.el7
  libICE.x86_64 0:1.0.9-9.el7                          libSM.x86_64 0:1.2.2-2.el7
  libXcursor.x86_64 0:1.1.15-1.el7                     libXext.x86_64 0:1.3.3-3.el7
  libXfixes.x86_64 0:5.0.3-1.el7                       libXi.x86_64 0:1.7.9-1.el7
  libXinerama.x86_64 0:1.1.3-2.1.el7                   libXmu.x86_64 0:1.1.2-2.el7
  libXrandr.x86_64 0:1.5.1-2.el7                       libXrender.x86_64 0:0.9.10-1.el7
  libXt.x86_64 0:1.1.5-3.el7                           libXxf86misc.x86_64 0:1.0.3-7.1.el7
  libXxf86vm.x86_64 0:1.1.4-1.el7                      libfontenc.x86_64 0:1.1.3-3.el7
  urw-base35-bookman-fonts.noarch 0:20170801-10.el7    urw-base35-c059-fonts.noarch 0:20170801-10.el7
  urw-base35-d05000l-fonts.noarch 0:20170801-10.el7    urw-base35-fonts.noarch 0:20170801-10.el7
  urw-base35-fonts-common.noarch 0:20170801-10.el7     urw-base35-gothic-fonts.noarch 0:20170801-10.el7
  urw-base35-nimbus-mono-ps-fonts.noarch 0:20170801-10.el7  urw-base35-nimbus-roman-fonts.noarch 0:20170801-10.el7
  urw-base35-nimbus-sans-fonts.noarch 0:20170801-10.el7     urw-base35-p052-fonts.noarch 0:20170801-10.el7
  urw-base35-standard-symbols-ps-fonts.noarch 0:20170801-10.el7  urw-base35-z003-fonts.noarch 0:20170801-10.el7
  xorg-x11-font-utils.x86_64 1:7.5-21.el7              xorg-x11-server-utils.x86_64 0:7.7-20.el7

Complete!
```

Starting Grafana

```
[k8684@lab1.k8684.local yum.repos.d]$ systemctl start grafana-server
 ==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===
Authentication is required to manage system services or units.
Authenticating as: k8684
Password:
 ==== AUTHENTICATION COMPLETE ===
```

As we can see, by default service doesn't start on boot

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Using systemctl enable to start service on boot

Now we can see "Enabled"

Rebooting machine

After reboot Grafana is running

Finding what port Grafana is using

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```
[k8684@lab1.k8684.local ~]$ sudo netstat -pnltu
[sudo] password for k8684:
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.1:25            0.0.0.0:*               LISTEN      1160/master
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      1056/sshd
tcp6       0      0 ::1:25                  :::*                    LISTEN      1160/master
tcp6       0      0 :::111                  :::*                    LISTEN      1/systemd
tcp6       0      0 :::22                   :::*                    LISTEN      1056/sshd
tcp6       0      0 :::3000                 :::*                    LISTEN      1060/grafana-server
udp        0      0 0.0.0.0:111             0.0.0.0:*                           1/systemd
udp6       0      0 :::111                  :::*                                1/systemd
[k8684@lab1.k8684.local ~]$
```

As we can see, Grafana is using port 3000

```
[k8684@lab1.k8684.local ~]$ sudo lsof -i :3000
[sudo] password for k8684:
COMMAND    PID    USER   FD   TYPE DEVICE SIZE/OFF NODE NAME
grafana-s 1060 grafana    8u  IPv6  18775      0t0  TCP *:hbci (LISTEN)
[k8684@lab1.k8684.local ~]$
```

Had to flush firewall rules with

```
[k8684@lab1.k8684.local ~]$ sudo iptables -F
```

So I can access Grafana from my web browser on host machine.

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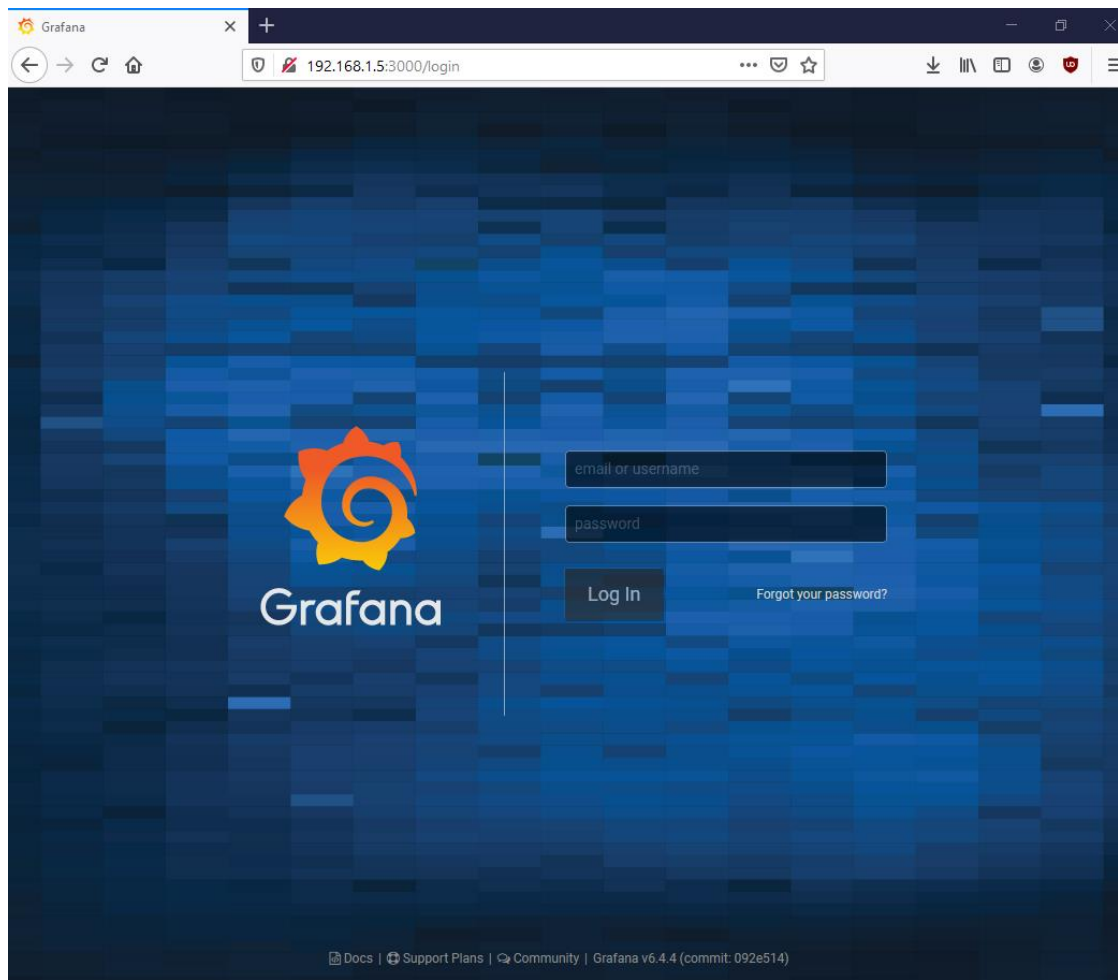
4 Firewall Rule

Hups, did Grafana stuff a little bit beforehand :P

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Creating xml rule

```
[k8684@lab1.k8684.local services]$ cat grafana.xml
<?xml version="1.0" encoding="utf-8"?>
<service>
  <short>Grafana</short>
  <description>Grafana rule</description>
  <port protocol="tcp" port="3000"/>
</service>
```

Allowing Grafana permanently

```
[k8684@lab1.k8684.local services]$ sudo firewall-cmd --zone=public --add-port=3000/tcp --permanent
success
```

Reloading firewall

```
[k8684@lab1.k8684.local ~]$ sudo firewall-cmd --reload
success
```

Grafana works

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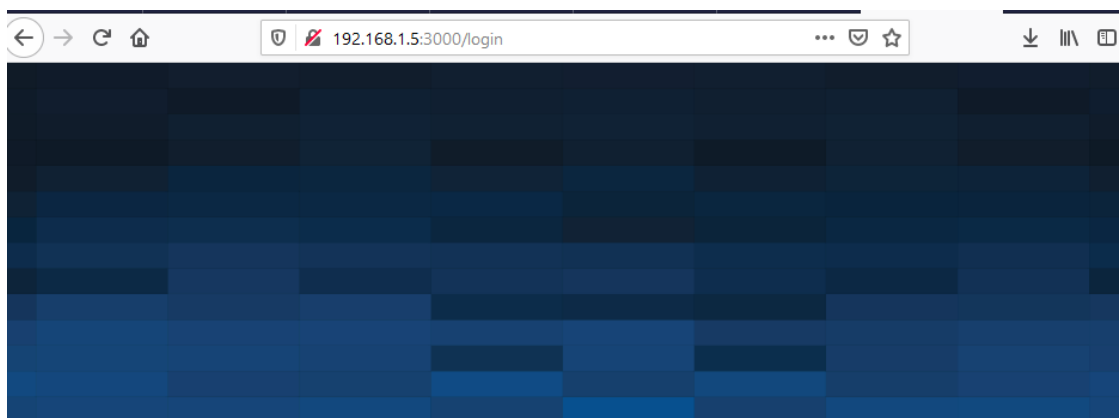
Port forwarding:

```
success
[k8684@lab1.k8684.local ~]$ sudo firewall-cmd --add-forward-port=port=80:proto=tcp:toport=3000 --permanent
success
[k8684@lab1.k8684.local ~]$ sudo firewall-cmd --reload
success
```
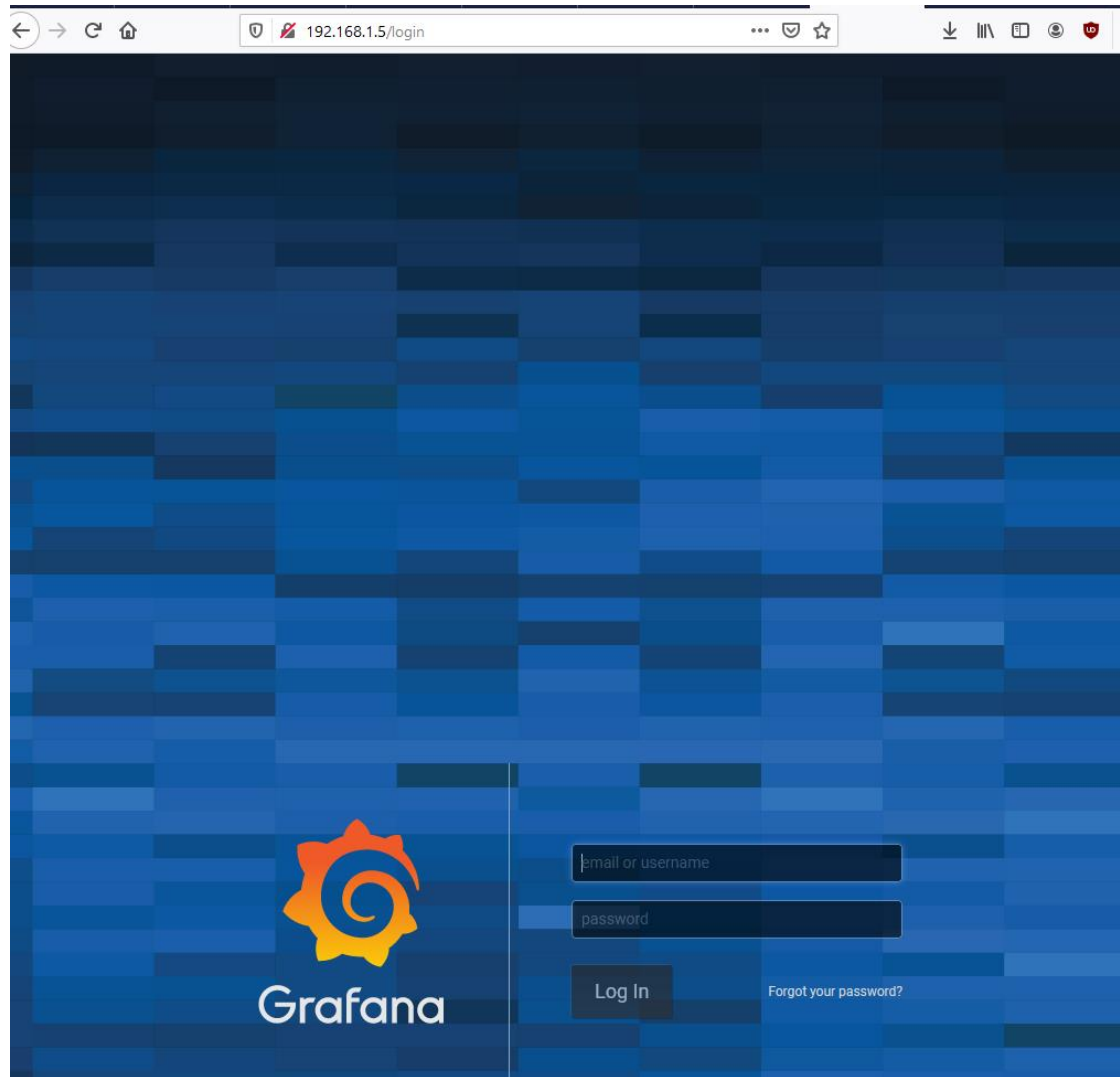
5   Manual package installation

Downloading using wget

```
[k8684@lab1.k8684.local Downloads]$ wget "http://student.labranet.jamk.fi/~jojuh/lx/opentftpd.tar.gz"
--2019-11-24 07:50:59--  http://student.labranet.jamk.fi/~jojuh/lx/opentftpd.tar.gz
Resolving student.labranet.jamk.fi (student.labranet.jamk.fi)... 195.148.26.130
Connecting to student.labranet.jamk.fi (student.labranet.jamk.fi)|195.148.26.130|:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://student.labranet.jamk.fi/~jojuh/lx/opentftpd.tar.gz [following]
--2019-11-24 07:50:59--  https://student.labranet.jamk.fi/~jojuh/lx/opentftpd.tar.gz
Connecting to student.labranet.jamk.fi (student.labranet.jamk.fi)|195.148.26.130|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 51655 (50K) [application/x-gzip]
Saving to: 'opentftpd.tar.gz'

100%[===============================================================================>] 51,655      --.-K/s   in 0.02s

2019-11-24 07:50:59 (2.01 MB/s) - 'opentftpd.tar.gz' saved [51655/51655]

[k8684@lab1.k8684.local Downloads]$ ls
opentftpd.tar.gz
```

Unpacking

```
[k8684@lab1.k8684.local Downloads]$ tar -xvf opentftpd.tar.gz
opentftp/
opentftp/opentftpd.h
opentftp/README
opentftp/opentftpd.cpp
opentftp/rc.opentftp
opentftp/opentftpd
opentftp/Licence.txt
opentftp/opentftp.ini
```

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Installing gcc compiler

```
[k8684@lab1.k8684.local opentftp]$ sudo yum -y install gcc
```

```
sudo yum install gcc-c++
```

Compiling,

```
[k8684@lab1.k8684.local opentftp]$ g++ opentftpd.cpp -oopentftpd -lpthread
[k8684@lab1.k8684.local opentftp]$ ls
Licence.txt  opentftpd  opentftpd.cpp  opentftpd.h  opentftp.ini  rc.opentftp  README
[k8684@lab1.k8684.local opentftp]$ sudo cp opentftpd /usr/local/sbin/
[k8684@lab1.k8684.local opentftp]$ sudo cp opentftp.ini /etc/
```

Service definition

```
[k8684@lab1.k8684.local system]$ cat opentftpd.service
[Unit]
Description=Opentftpd

[Service]
ExecStart=/usr/local/sbin/opentftpd -i /etc/opentftp.ini
Type=forking

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

Service is running

```
[k8684@lab1.k8684.local system]$ systemctl status opentftpd.service
● opentftpd.service - Opentftpd
   Loaded: loaded (/etc/systemd/system/opentftpd.service; disabled; vendor preset: disabled)
   Active: active (running) since Sun 2019-11-24 08:04:16 EET; 8s ago
  Process: 2159 ExecStart=/usr/local/sbin/opentftpd -i /etc/opentftp.ini (code=exited, status=0/SUCCESS)
 Main PID: 2160 (opentftpd)
   CGroup: /system.slice/opentftpd.service
           └─2160 /usr/local/sbin/opentftpd -i /etc/opentftp.ini
```

6   Extra Task

Pressing "e" during boot to access extra settings

```
setparams 'CentOS Linux (3.10.0-1062.4.3.el7.x86_64) 7 (Core)' 'fedora'

        load_video
        set gfxpayload=keep
        insmod gzio
        insmod part_msdos
        insmod xfs
        set root='hd0,msdos1'
        if [ x$feature_platform_search_hint = xy ]; then
          search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1 --hin\
t-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1 --hint='hd0,msdos1'  c453c708-5\
ec3-49f6-b642-e51bbda89ae4
        else
          search --no-floppy --fs-uuid --set=root c453c708-5ec3-49f6-b642-e51b\
bda89ae4                                                                      ↓

        Press Ctrl-x to start, Ctrl-c for a command prompt or Escape to
        discard edits and return to the menu. Pressing Tab lists
        possible completions.
```

Adding rd.break to the end of linux16 line

```
        linux16 /vmlinuz-3.10.0-1062.4.3.el7.x86_64 root=/dev/mapper/centos-ro\
ot ro rd.lvm.lv=centos/root rd.lvm.lv=centos/swap crashkernel=auto rhgb quiet \
LANG=en_US.UTF-8 rd.break_
```

```
switch_root:/# mount -o remount,rw /sysroot
```

```
switch_root:/# chroot /sysroot/
```

```
sh-4.2# passwd
Changing password for user root.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
sh-4.2# _
```

```
sh-4.2# touch /.autorelabel
sh-4.2# _
```

Rebooting

```
         Starting Create Static Device Nodes in /dev...
[  OK  ] Started Journal Service.
         Starting Flush Journal to Persistent Storage...
[  OK  ] Started udev Coldplug all Devices.
         Starting udev Wait for Complete Device Initialization...
[  OK  ] Started Flush Journal to Persistent Storage.
[  OK  ] Started LVM2 metadata daemon.
[  OK  ] Started Configure read-only root support.
         Starting Load/Save Random Seed...
[  OK  ] Started Load/Save Random Seed.
[  OK  ] Started Create Static Device Nodes in /dev.
         Starting udev Kernel Device Manager...
[  OK  ] Started udev Kernel Device Manager.
[  OK  ] Found device VBOX_HARDDISK 1.
[  OK  ] Created slice system-lvm2\x2dpvscan.slice.
         Starting LVM2 PV scan on device 8:2...
[  OK  ] Started Monitoring of LVM2 mirrors,...ng dmeventd or progress polling.
[  OK  ] Reached target Local File Systems (Pre).
         Mounting /boot...
[  OK  ] Started LVM2 PV scan on device 8:2.
[  OK  ] Found device /dev/mapper/centos-swap.
         Activating swap /dev/mapper/centos-swap...
[  OK  ] Activated swap /dev/mapper/centos-swap.
[  OK  ] Reached target Swap.
```

And successful login with new root password

```
lab1 login: root
Password:
Last login: Sun Nov 24 05:19:26 from 192.168.1.13
ABRT has detected 1 problem(s). For more info run: abrt-cli list --since 157456
566
[root@lab1.k8684.local ~]# _
```

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