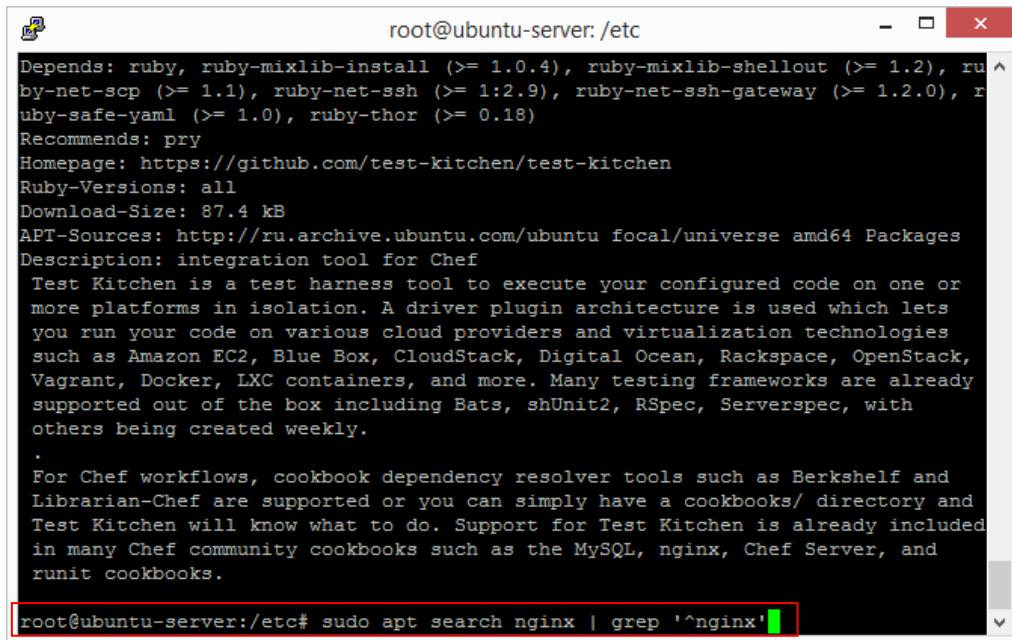


Практическое задание по уроку №7 «Управление пакетами и репозиториями. Основы сетевой безопасности»

1. Подключить репозиторий с nginx любым удобным способом, установить nginx и потом удалить nginx, используя утилиту dpkg.

Решение

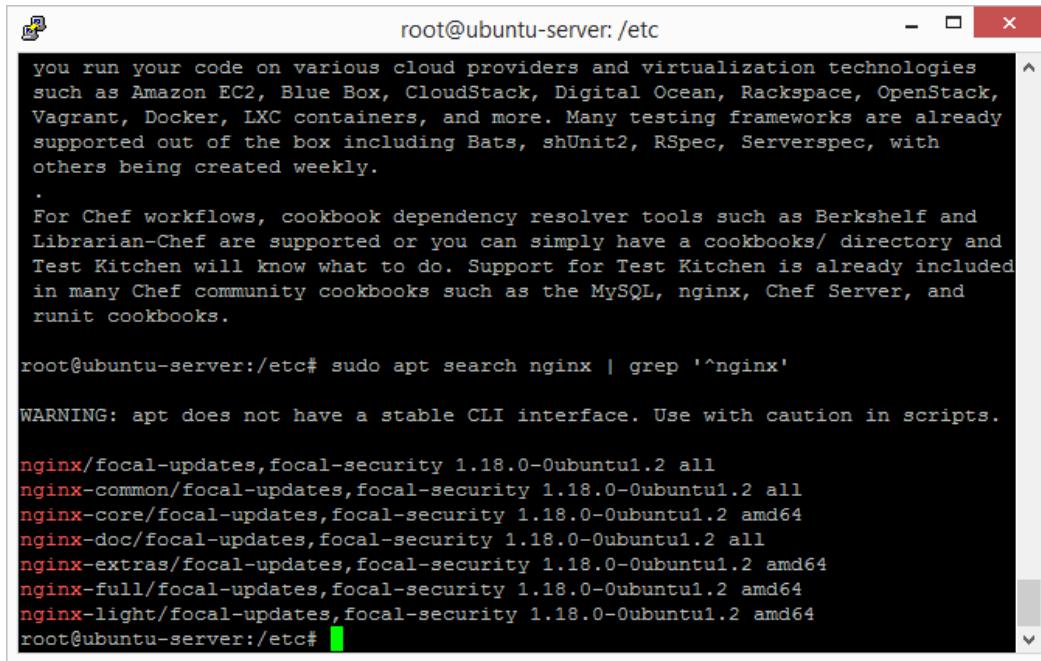
- Первоначально произведем поиск имеющихся репозиториев, включающих пакет nginx.
Для этого введем команду `apt search nginx | grep '^nginx'`



```
root@ubuntu-server:/etc
Depends: ruby, ruby-mixlib-install (>= 1.0.4), ruby-mixlib-shellout (>= 1.2), ru
by-net-scp (>= 1.1), ruby-net-ssh (>= 1:2.9), ruby-net-ssh-gateway (>= 1.2.0), r
uby-safe-yaml (>= 1.0), ruby-thor (>= 0.18)
Recommends: pry
Homepage: https://github.com/test-kitchen/test-kitchen
Ruby-Versions: all
Download-Size: 87.4 kB
APT-Sources: http://ru.archive.ubuntu.com/ubuntu focal/universe amd64 Packages
Description: integration tool for Chef
Test Kitchen is a test harness tool to execute your configured code on one or
more platforms in isolation. A driver plugin architecture is used which lets
you run your code on various cloud providers and virtualization technologies
such as Amazon EC2, Blue Box, CloudStack, Digital Ocean, Rackspace, OpenStack,
Vagrant, Docker, LXC containers, and more. Many testing frameworks are already
supported out of the box including Bats, shUnit2, RSpec, Serverspec, with
others being created weekly.
.
For Chef workflows, cookbook dependency resolver tools such as Berkshelf and
Librarian-Chef are supported or you can simply have a cookbooks/ directory and
Test Kitchen will know what to do. Support for Test Kitchen is already included
in many Chef community cookbooks such as the MySQL, nginx, Chef Server, and
runit cookbooks.

root@ubuntu-server:/etc# sudo apt search nginx | grep '^nginx'
```

- Результаты поиска будут следующие



```
root@ubuntu-server:/etc
you run your code on various cloud providers and virtualization technologies
such as Amazon EC2, Blue Box, CloudStack, Digital Ocean, Rackspace, OpenStack,
Vagrant, Docker, LXC containers, and more. Many testing frameworks are already
supported out of the box including Bats, shUnit2, RSpec, Serverspec, with
others being created weekly.
.
For Chef workflows, cookbook dependency resolver tools such as Berkshelf and
Librarian-Chef are supported or you can simply have a cookbooks/ directory and
Test Kitchen will know what to do. Support for Test Kitchen is already included
in many Chef community cookbooks such as the MySQL, nginx, Chef Server, and
runit cookbooks.

root@ubuntu-server:/etc# sudo apt search nginx | grep '^nginx'

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

nginx/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-common/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-core/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-doc/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-extras/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-full/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-light/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
root@ubuntu-server:/etc#
```

- Выбираем для установки пакет nginx-common и с помощью команды sudo apt-add-repository -r nginx-common подключаем его

```

root@ubuntu-server:/etc#
you run your code on various cloud providers and virtualization technologies
such as Amazon EC2, Blue Box, CloudStack, Digital Ocean, Rackspace, OpenStack,
Vagrant, Docker, LXC containers, and more. Many testing frameworks are already
supported out of the box including Bats, shUnit2, RSpec, Serverspec, with
others being created weekly.

.
For Chef workflows, cookbook dependency resolver tools such as Berkshelf and
Librarian-Chef are supported or you can simply have a cookbooks/ directory and
Test Kitchen will know what to do. Support for Test Kitchen is already included
in many Chef community cookbooks such as the MySQL, nginx, Chef Server, and
runit cookbooks.

root@ubuntu-server:/etc# sudo apt search nginx | grep '^nginx'

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

nginx/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-common/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-core/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-doc/focal-updates,focal-security 1.18.0-0ubuntu1.2 all
nginx-extras/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-full/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
nginx-light/focal-updates,focal-security 1.18.0-0ubuntu1.2 amd64
root@ubuntu-server:/etc# sudo apt-add-repository -r nginx-common

```

- Проверяем, что в списке установленных репозиториев нет nginx-common и с помощью команды sudo apt install nginx-common устанавливаем пакет

```

root@ubuntu-server:/etc#
ii  uuid-runtime           2.34-0.1ubuntu9.1          amd64>^
ii  vim                   2:8.1.2269-1ubuntu5.3      amd64>
ii  vim-common             2:8.1.2269-1ubuntu5.3      all >
ii  vim-runtime            2:8.1.2269-1ubuntu5.3      all >
ii  vim-tiny               2:8.1.2269-1ubuntu5.3      amd64>
ii  wget                  1.20.3-1ubuntu1          amd64>
ii  whiptail               0.52.21-4ubuntu2          amd64>
ii  wireless-regdb         2021.08.28-0ubuntu1~20.04.1   all >
ii  xauth                 1:1.1-0ubuntu1          amd64>
ii  xdg-user-dirs          0.17-2ubuntu1          amd64>
ii  xfsprogs              5.3.0-1ubuntu2          amd64>
ii  xkb-data               2.29-2                  all >
ii  xxd                   2:8.1.2269-1ubuntu5.3      amd64>
ii  xz-utils               5.2.4-1ubuntu1          amd64>
ii  zerofree               1.1.1-1                amd64>
ii  zlib1g:amd64           1:1.2.11.dfsg-2ubuntu1.2  amd64>
root@ubuntu-server:/etc# dpkg --list | grep 'nginx'
root@ubuntu-server:/etc# dpkg --list | grep nginx
root@ubuntu-server:/etc# dpkg --list | grep xxd
ii  xxd                   2:8.1.2269-1ubuntu5.3      amd64>
    tool to make (or reverse) a hex dump
root@ubuntu-server:/etc# sudo apt install nginx-common
sudo: apt: command not found
root@ubuntu-server:/etc# sudo apt install nginx-common

```

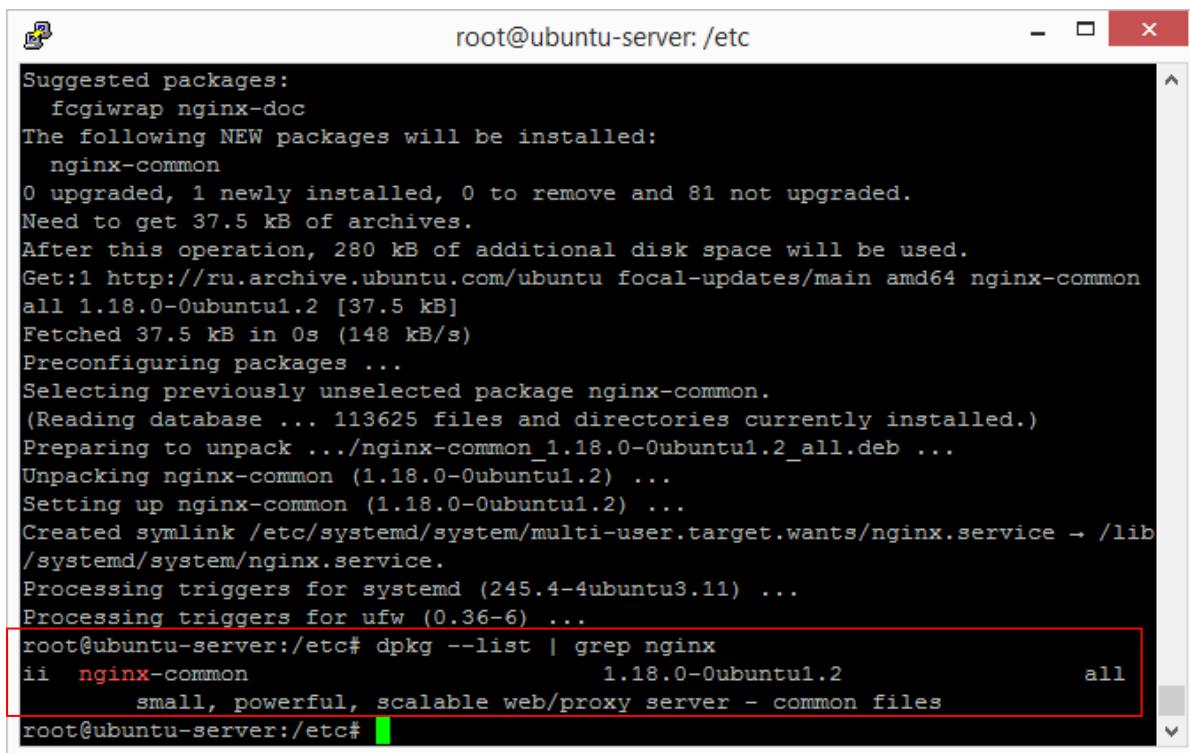
- Процесс установки начался

```
root@ubuntu-server:/etc
ii  vim-tiny                      2:8.1.2269-1ubuntu5.3      amd64
ii  wget                           1.20.3-1ubuntu1           amd64
ii  whiptail                        0.52.21-4ubuntu2          amd64
ii  wireless-regdb                 2021.08.28-0ubuntu1~20.04.1 all
ii  xauth                          1:1.1-0ubuntu1            amd64
ii  xdg-user-dirs                  0.17-2ubuntu1             amd64
ii  xfsprogs                       5.3.0-1ubuntu2             amd64
ii  xkb-data                        2.29-2                   all
ii  xxd                            2:8.1.2269-1ubuntu5.3      amd64
ii  xz-utils                        5.2.4-1ubuntu1            amd64
ii  zerofree                        1.1.1-1                  amd64
ii  zlib1g:amd64                   1:1.2.11.dfsg-2ubuntu1.2  amd64
root@ubuntu-server:/etc# dpkg --list | grep 'nginx'
root@ubuntu-server:/etc# dpkg --list | grep nginx
root@ubuntu-server:/etc# dpkg --list | grep xxd
ii  xxd                            2:8.1.2269-1ubuntu5.3      amd64
     tool to make (or reverse) a hex dump
root@ubuntu-server:/etc# sudo apt install nginx-common
sudo: apt: command not found
root@ubuntu-server:/etc# sudo apt install nginx-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

- Пакет nginx-common установлен

```
root@ubuntu-server:/etc
Reading state information... Done
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  nginx-common
0 upgraded, 1 newly installed, 0 to remove and 81 not upgraded.
Need to get 37.5 kB of archives.
After this operation, 280 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.2 [37.5 kB]
Fetched 37.5 kB in 0s (148 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 113625 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.18.0-0ubuntu1.2_all.deb ...
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc#
```

- С помощью команды `dpkg --list` проверяем, что пакет появился в общем списке. It означает, что все установлено и работает

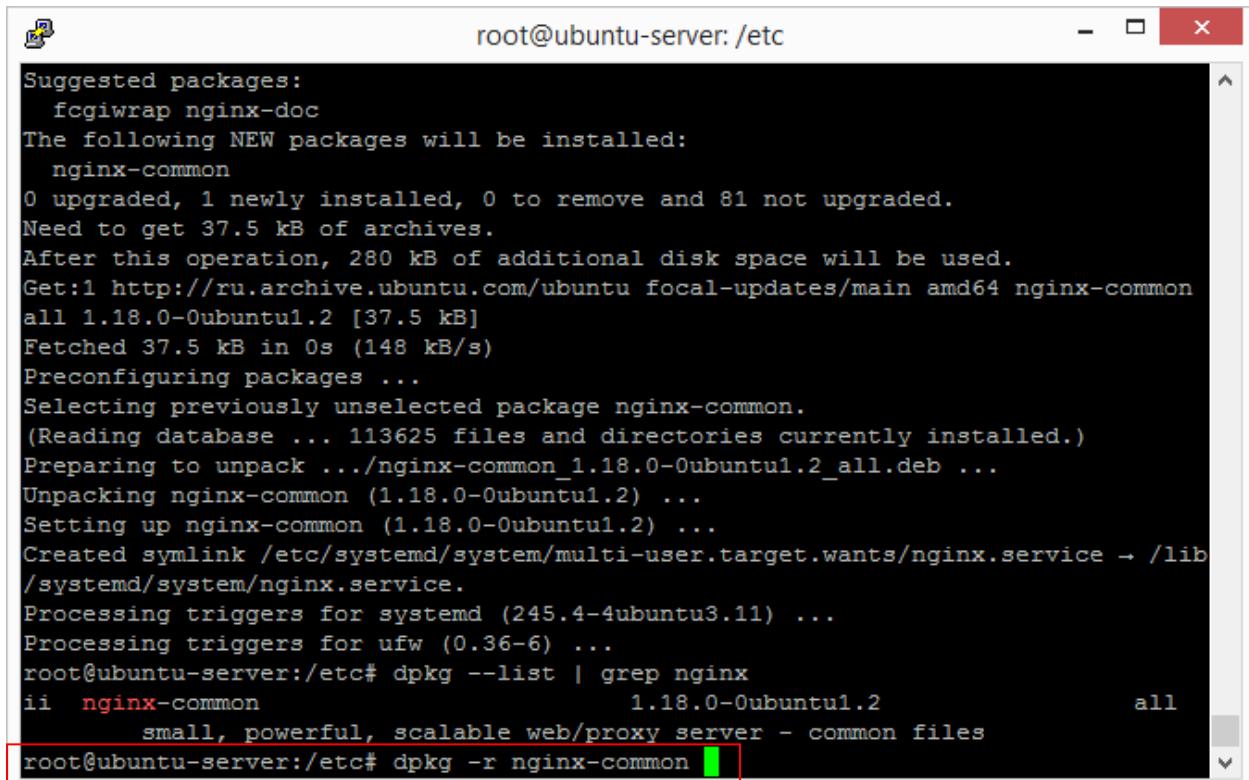


```

root@ubuntu-server: /etc
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  nginx-common
0 upgraded, 1 newly installed, 0 to remove and 81 not upgraded.
Need to get 37.5 kB of archives.
After this operation, 280 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.2 [37.5 kB]
Fetched 37.5 kB in 0s (148 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 113625 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.18.0-0ubuntu1.2_all.deb ...
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
ii  nginx-common                      1.18.0-0ubuntu1.2          all
    small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc#

```

- Для удаления пакета с помощью пакетного менеджера `dpkg` вводим команду `dpkg -r nginx-common` (аргумент `r` – remove)



```

root@ubuntu-server: /etc
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  nginx-common
0 upgraded, 1 newly installed, 0 to remove and 81 not upgraded.
Need to get 37.5 kB of archives.
After this operation, 280 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.2 [37.5 kB]
Fetched 37.5 kB in 0s (148 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 113625 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.18.0-0ubuntu1.2_all.deb ...
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
ii  nginx-common                      1.18.0-0ubuntu1.2          all
    small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -r nginx-common

```

- Проверяем, остался ли пакет в общем списке

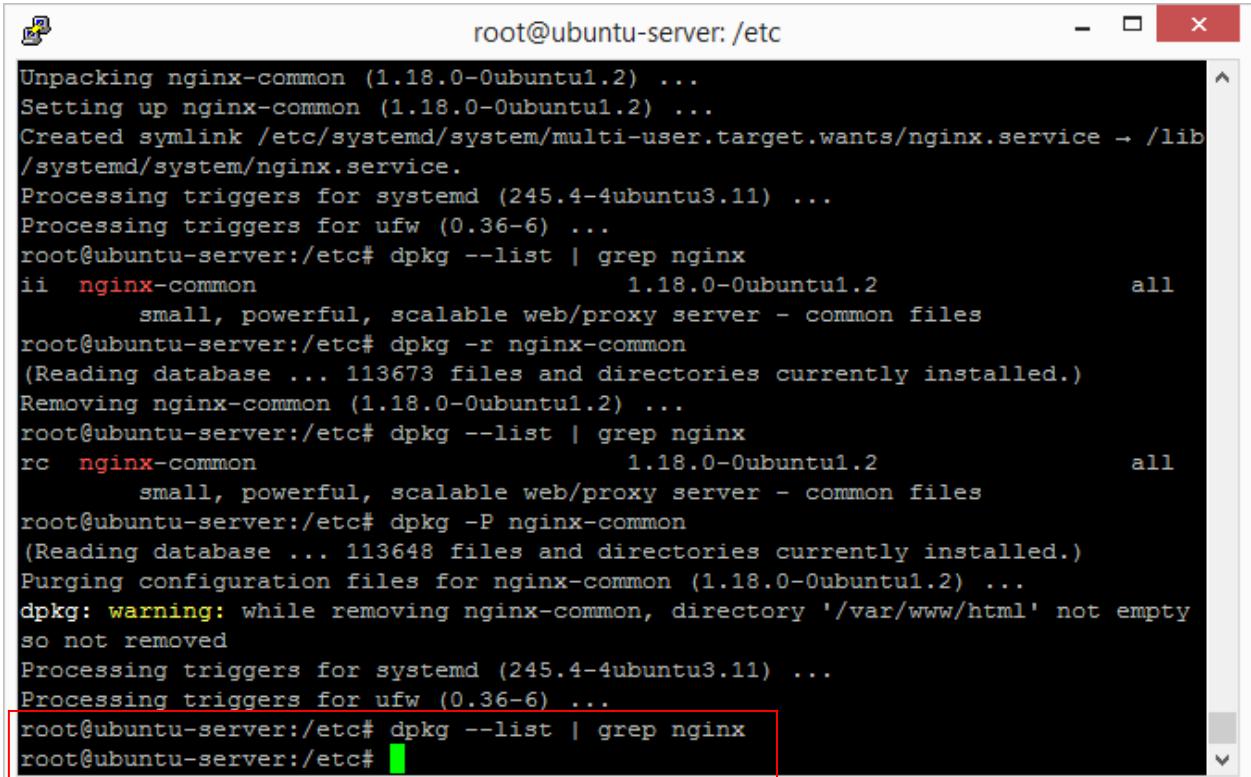
```
root@ubuntu-server: /etc
After this operation, 280 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.2 [37.5 kB]
Fetched 37.5 kB in 0s (148 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 113625 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.18.0-0ubuntu1.2_all.deb ...
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
ii  nginx-common                      1.18.0-0ubuntu1.2          all
      small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -r nginx-common
(Reading database ... 113673 files and directories currently installed.)
Removing nginx-common (1.18.0-0ubuntu1.2) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
rc  nginx-common                      1.18.0-0ubuntu1.2          all
      small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc#
```

Несмотря на то, что мы его удалили, конфигурация осталась (об этом свидетельствует rc)

- Для полного удаления используем команду `dpkg -P nginx-common` (`p` – purge)

```
root@ubuntu-server: /etc
After this operation, 280 kB of additional disk space will be used.
Get:1 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
all 1.18.0-0ubuntu1.2 [37.5 kB]
Fetched 37.5 kB in 0s (148 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 113625 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.18.0-0ubuntu1.2_all.deb ...
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
ii  nginx-common                      1.18.0-0ubuntu1.2          all
      small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -r nginx-common
(Reading database ... 113673 files and directories currently installed.)
Removing nginx-common (1.18.0-0ubuntu1.2) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
rc  nginx-common                      1.18.0-0ubuntu1.2          all
      small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -P nginx-common
```

- Убеждаемся, что пакета больше нет в общем списке



```
root@ubuntu-server: /etc
Unpacking nginx-common (1.18.0-0ubuntu1.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib
/systemd/system/nginx.service.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
ii  nginx-common                      1.18.0-0ubuntu1.2          all
    small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -r nginx-common
(Reading database ... 113673 files and directories currently installed.)
Removing nginx-common (1.18.0-0ubuntu1.2) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
rc  nginx-common                      1.18.0-0ubuntu1.2          all
    small, powerful, scalable web/proxy server - common files
root@ubuntu-server:/etc# dpkg -P nginx-common
(Reading database ... 113648 files and directories currently installed.)
Purging configuration files for nginx-common (1.18.0-0ubuntu1.2) ...
dpkg: warning: while removing nginx-common, directory '/var/www/html' not empty
so not removed
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for ufw (0.36-6) ...
root@ubuntu-server:/etc# dpkg --list | grep nginx
root@ubuntu-server:/etc#
```

2. Установить пакет на свой выбор используя snap.

Решение

- Первоначально произведем поиск имеющихся пакетов с помощью функции snap list

```
root@ubuntu-server: /etc
velbus-tcp      1.4.1          velbus      -      Python
application that bridges a Velbus installation with TCP
bashfuscator    7487348        brlin      -      A full
y configurable and extendable Bash obfuscation framework
pyphoon         0.2           kz6fittycent -      ASCII
Art Phase of the Moon!
opencv-demo-ogra 0.1           ogra       -      A litt
le face recognition test
lazfuck         1.1.0          chronoscz -      A simp
le BrainFuck IDE written in Lazarus/FPC.
lolcat-python    0.44          simosx     -      lolcat
utility written in Python
root@ubuntu-server:/etc# snap search foobar
Name      Version Publisher Notes Summary
foobar2000 1.6.7   mmtrt   -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon 0.1    tbrandon -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap list
Name      Version Rev Tracking Publisher Notes
core18   20210722 2128 latest/stable canonical✓ base
core20   20210702 1081 latest/stable canonical✓ base
lxd      4.0.7    21545 4.0/stable/... canonical✓ -
snapd    2.51.7   13170 latest/stable canonical✓ snapd
root@ubuntu-server:/etc#
```

- Рассмотрим для установки пакет приложения для воспроизведения музыки foobar2000. Найдем его с помощью поиска

```
root@ubuntu-server: /etc
Art Phase of the Moon!
opencv-demo-ogra 0.1           ogra       -      A litt
le face recognition test
lazfuck         1.1.0          chronoscz -      A simp
le BrainFuck IDE written in Lazarus/FPC.
lolcat-python    0.44          simosx     -      lolcat
utility written in Python
root@ubuntu-server:/etc# snap search foobar
Name      Version Publisher Notes Summary
foobar2000 1.6.7   mmtrt   -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon 0.1    tbrandon -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap list
Name      Version Rev Tracking Publisher Notes
core18   20210722 2128 latest/stable canonical✓ base
core20   20210702 1081 latest/stable canonical✓ base
lxd      4.0.7    21545 4.0/stable/... canonical✓ -
snapd    2.51.7   13170 latest/stable canonical✓ snapd
root@ubuntu-server:/etc# snap search foobar
Name      Version Publisher Notes Summary
foobar2000 1.6.7   mmtrt   -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon 0.1    tbrandon -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc#
```

Выберем первый пакет foobar2000

- Запустим установку данного пакета с помощью команды snap install foobar2000

```

root@ubuntu-server:/etc
Art Phase of the Moon!
opencv-demo-ogra      0.1                  ogra          -      A litt
le face recognition test
lazfuck                1.1.0                 chronoscz     -      A simp
le BrainFuck IDE written in Lazarus/FPC.
lolcat-python          0.44                 simosx        -      lolcat
utility written in Python
root@ubuntu-server:/etc# snap search foobar
Name      Version  Publisher  Notes  Summary
foobar2000  1.6.7   mmtprt    -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon  0.1      tbrandon   -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap list
Name      Version  Rev  Tracking      Publisher  Notes
core18    20210722 2128 latest/stable canonical✓  base
core20    20210702 1081 latest/stable canonical✓  base
lxd       4.0.7    21545 4.0/stable/... canonical✓  -
snapd    2.51.7   13170 latest/stable canonical✓  snapd
root@ubuntu-server:/etc# snap search foobar
Name      Version  Publisher  Notes  Summary
foobar2000  1.6.7   mmtprt    -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon  0.1      tbrandon   -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap install foobar2000

```

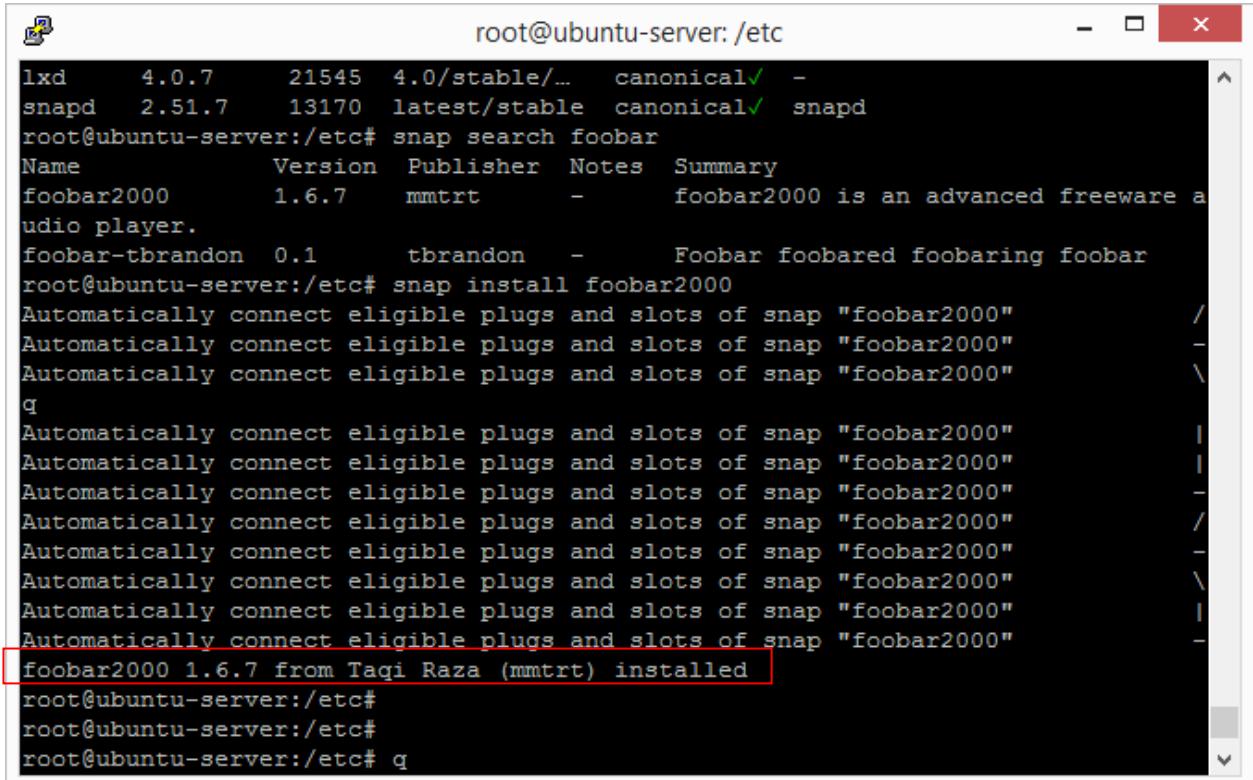
- Процесс установки пошел

```

root@ubuntu-server:/etc
opencv-demo-ogra      0.1                  ogra          -      A litt
le face recognition test
lazfuck                1.1.0                 chronoscz     -      A simp
le BrainFuck IDE written in Lazarus/FPC.
lolcat-python          0.44                 simosx        -      lolcat
utility written in Python
root@ubuntu-server:/etc# snap search foobar
Name      Version  Publisher  Notes  Summary
foobar2000  1.6.7   mmtprt    -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon  0.1      tbrandon   -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap list
Name      Version  Rev  Tracking      Publisher  Notes
core18    20210722 2128 latest/stable canonical✓  base
core20    20210702 1081 latest/stable canonical✓  base
lxd       4.0.7    21545 4.0/stable/... canonical✓  -
snapd    2.51.7   13170 latest/stable canonical✓  snapd
root@ubuntu-server:/etc# snap search foobar
Name      Version  Publisher  Notes  Summary
foobar2000  1.6.7   mmtprt    -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon  0.1      tbrandon   -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap install foobar2000
Download snap "foobar2000" (392) from channel "stable"           22% 588kB/s 14.2s

```

- Установка завершена (потребовалось около 4 минут)

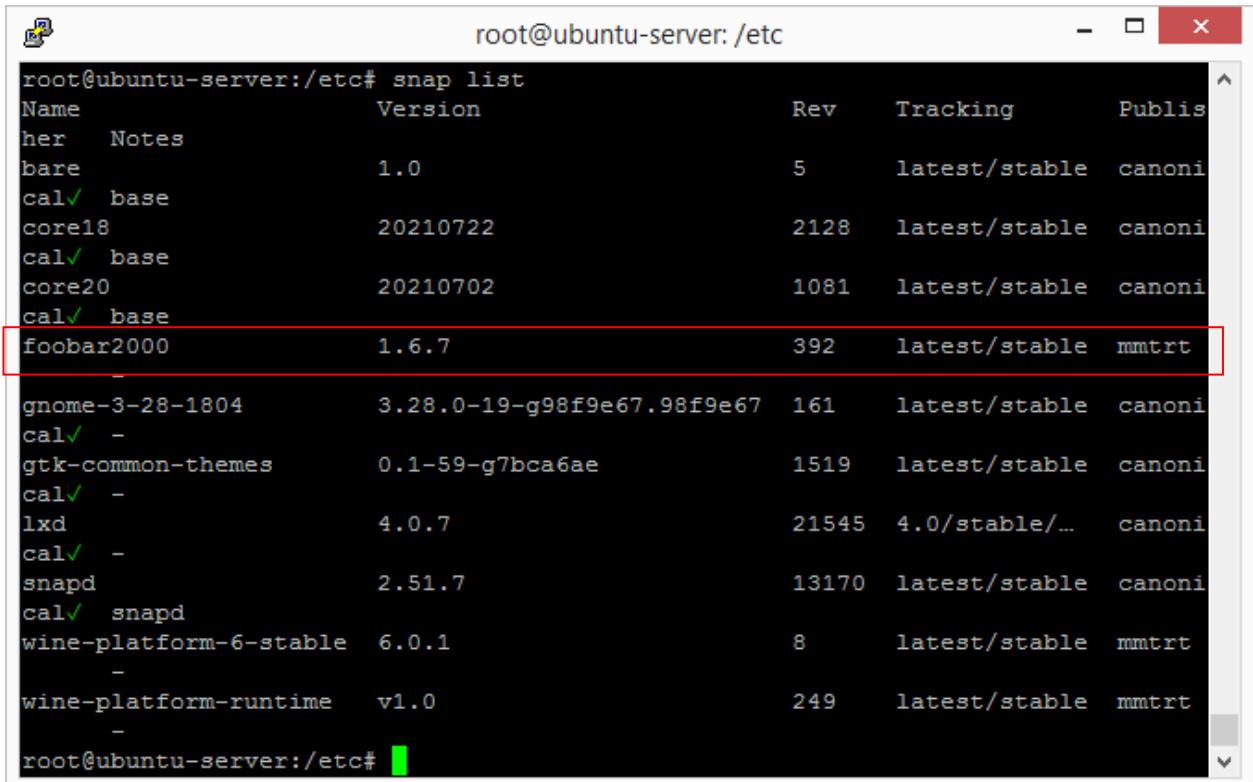


```

root@ubuntu-server:/etc#
lxde      4.0.7      21545  4.0/stable/... canonical✓ -
snapd     2.51.7     13170  latest/stable canonical✓ snapd
root@ubuntu-server:/etc# snap search foobar
Name          Version Publisher Notes Summary
foobar2000    1.6.7   mmmtrt   -      foobar2000 is an advanced freeware a
udio player.
foobar-tbrandon 0.1    tbrandon -      Foobar foobared foobaring foobar
root@ubuntu-server:/etc# snap install foobar2000
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
q
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
Automatically connect eligible plugs and slots of snap "foobar2000"
foobar2000 1.6.7 from Tagi Raza (mmtrt) installed
root@ubuntu-server:/etc#
root@ubuntu-server:/etc#
root@ubuntu-server:/etc# q

```

- Проверяем наличие пакета в общем списке с помощью snap list. Пакет имеется



Name	Version	Rev	Tracking	Publisher
bare	1.0	5	latest/stable	canonical✓
core18	20210722	2128	latest/stable	canonical✓
core20	20210702	1081	latest/stable	canonical✓
foobar2000	1.6.7	392	latest/stable	mmtrt
gnome-3-28-1804	3.28.0-19-g98f9e67.98f9e67	161	latest/stable	canonical✓
gtk-common-themes	0.1-59-g7bca6ae	1519	latest/stable	canonical✓
lxde	4.0.7	21545	4.0/stable/...	canonical✓
snapd	2.51.7	13170	latest/stable	canonical✓
wine-platform-6-stable	6.0.1	8	latest/stable	mmtrt
wine-platform-runtime	v1.0	249	latest/stable	mmtrt

3. Настроить iptables: разрешить подключения только на 22-й и 80-й порты.

Решение

- Проверим существующие на данный момент правил с помощью команды `iptables -t filter -L -nv`

```
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source               destination
Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source               destination
Chain OUTPUT (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source               destination
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 60 packets, 4338 bytes)
pkts bytes target     prot opt in     out     source               destination
Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source               destination
Chain OUTPUT (policy ACCEPT 29 packets, 3436 bytes)
pkts bytes target     prot opt in     out     source               destination
root@ubuntu-server:/etc#
```

- Откроем порты 22 и 80 (разрешим подключение) с помощью команд `iptables -A INPUT -p tcp --dport 22 -i ACCEPT` и `iptables -A INPUT -p tcp --dport 80 -i ACCEPT`

```
root@ubuntu-server:/etc# telnet 192.168.0.19 22
Trying 192.168.0.19...
Connected to 192.168.0.19.
Escape character is '^]'.
SSH-2.0-OpenSSH_8.2p1 Ubuntu-4ubuntu0.3

Invalid SSH identification string.
Connection closed by foreign host.
root@ubuntu-server:/etc# telnet 192.168.0.19 22
Trying 192.168.0.19...
Connected to 192.168.0.19.
Escape character is '^]'.
SSH-2.0-OpenSSH_8.2p1 Ubuntu-4ubuntu0.3

Invalid SSH identification string.
Connection closed by foreign host.
root@ubuntu-server:/etc# iptables -L INPUT -v -n |grep 22
root@ubuntu-server:/etc# iptables -L INPUT -n -v
Chain INPUT (policy ACCEPT 310 packets, 21857 bytes)
pkts bytes target     prot opt in     out     source               destination
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 22 -i ACCEPT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc#
```

- Снова проверим правила. Указанные порты открылись

```
root@ubuntu-server:/etc# iptables -L INPUT -v -n |grep 22
root@ubuntu-server:/etc# iptables -L INPUT -n -v
Chain INPUT (policy ACCEPT 310 packets, 21857 bytes)
pkts bytes target     prot opt in     out     source          destination
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 22 -i ACCEPT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 44 packets, 3168 bytes)
pkts bytes target     prot opt in     out     source          destination
0      0      tcp  --  ACCEPT  *      0.0.0.0/0      0.0.0.0/0
0      0      tcp  --  ACCEPT  *      0.0.0.0/0      0.0.0.0/0
tcp dpt:22
tcp dpt:80

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source          destination

Chain OUTPUT (policy ACCEPT 24 packets, 2544 bytes)
pkts bytes target     prot opt in     out     source          destination
root@ubuntu-server:/etc#
```

- В целях практики проведем некоторые дополнительные операции с портами. По 22 порту ограничим количество ssh-соединений на одного клиента до трех. Для этого воспользуемся командой iptables -A INPUT -p tcp --syn --dport 22 -m connlimit --connlimit-above 3 -j REJECT

```
root@ubuntu-server:/etc# iptables -L INPUT -v -n |grep 22
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 22 -i ACCEPT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 310 packets, 21857 bytes)
pkts bytes target     prot opt in     out     source          destination
0      0      tcp  --  ACCEPT  *      0.0.0.0/0      0.0.0.0/0
0      0      tcp  --  ACCEPT  *      0.0.0.0/0      0.0.0.0/0
tcp dpt:22
tcp dpt:80

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in     out     source          destination

Chain OUTPUT (policy ACCEPT 24 packets, 2544 bytes)
pkts bytes target     prot opt in     out     source          destination
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --syn --dport 22 -m connlimit --connlimit-above 3 -j REJECT
root@ubuntu-server:/etc#
```

- 80 порт отключим, заменив в команде, которая использовалась для подключения ACCEPT на DROP

```
root@ubuntu-server:/etc
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 22 -i ACCEPT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 44 packets, 3168 bytes)
pkts bytes target     prot opt in      out      source          destination
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in      out      source          destination

Chain OUTPUT (policy ACCEPT 24 packets, 2544 bytes)
pkts bytes target     prot opt in      out      source          destination
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --syn --dport 22 -m connlimit
--connlimit-above 3 -j REJECT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i DROP
root@ubuntu-server:/etc#
```

- Вновь проверим правила. 22 порт принял изменения, 80 порт отключился

```
--connlimit-above 3 -j REJECT
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i DROP
root@ubuntu-server:/etc# iptables -t filter -L -nv
Chain INPUT (policy ACCEPT 8 packets, 576 bytes)
pkts bytes target     prot opt in      out      source          destination
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0
0      0      ACCEPT   *       0.0.0.0/0    0.0.0.0/0
0      0      REJECT   *       *       0.0.0.0/0    0.0.0.0/0
tcp dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unreachable
0      0      DROP     *       *       0.0.0.0/0    0.0.0.0/0
tcp dpt:80

Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target     prot opt in      out      source          destination

Chain OUTPUT (policy ACCEPT 5 packets, 856 bytes)
pkts bytes target     prot opt in      out      source          destination
root@ubuntu-server:/etc#
```

4. Настроить проброс портов локально с порта 80 на порт 8080.

Технология NAT (network address translation) позволяет нескольким компьютерам объединяться в локальную сеть и быть доступными из внешней сети по IP адресу маршрутизатора.

Решение

- Первоначально подключим порт 8080

```
root@ubuntu-server:/etc
root@ubuntu-server:/etc# iptables -L
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc# iptables -t nat -A POSTROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080
iptables: Invalid argument. Run `dmesg` for more information.
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 8080 -i ACCEPT
root@ubuntu-server:/etc#
```

- Для настройки переброса воспользуемся командой `iptables -t nat -A PREROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080`

```
root@ubuntu-server:/etc
root@ubuntu-server:/etc# iptables -L
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 80 -i ACCEPT
root@ubuntu-server:/etc# iptables -t nat -A POSTROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080
iptables: Invalid argument. Run `dmesg` for more information.
root@ubuntu-server:/etc# iptables -A INPUT -p tcp --dport 8080 -i ACCEPT
root@ubuntu-server:/etc# iptables -t nat -A POSTROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080
iptables: Invalid argument. Run `dmesg` for more information.
root@ubuntu-server:/etc# iptables -t nat -A PREROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080
root@ubuntu-server:/etc#
```

- Проверим правила таблиц filter (порт 8080 открыт)

```
root@ubuntu-server: /etc
Chain INPUT (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target      prot opt in     out      source          destination
0      0      dpt:22    tcp   --  ACCEPT  *        0.0.0.0/0       0.0.0.0/0
0      0      dpt:80    tcp   --  ACCEPT  *        0.0.0.0/0       0.0.0.0/0
0      0      REJECT   tcp   --  *        *        0.0.0.0/0       0.0.0.0/0
      0      0      dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unreachable
Chain FORWARD (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target      prot opt in     out      source          destination
0      0      dpt:80    tcp   --  DROP   *        0.0.0.0/0       0.0.0.0/0
0      0      dpt:80    tcp   --  ACCEPT  *        0.0.0.0/0       0.0.0.0/0
0      0      dpt:80    tcp   --  ACCEPT  *        0.0.0.0/0       0.0.0.0/0
      0      0      dpt:8080   tcp   --  ACCEPT  *        0.0.0.0/0       0.0.0.0/0

Chain OUTPUT (policy ACCEPT 80 packets, 11488 bytes)
pkts bytes target      prot opt in     out      source          destination

root@ubuntu-server:/etc#
```

- Проверим правила таблиц nat. Переброс настроен

```
root@ubuntu-server: /etc
Chain OUTPUT (policy ACCEPT 80 packets, 11488 bytes)
pkts bytes target      prot opt in     out      source          destination

root@ubuntu-server:/etc# iptables -t nat -L -nv
Chain PREROUTING (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target      prot opt in     out      source          destination
      0      0      REDIRECT  tcp   --  *        *        0.0.0.0/0       0.0.0.0/0
      0      0      dpt:80    redirect ports 8080

Chain INPUT (policy ACCEPT 0 packets, 0 bytes)
pkts bytes target      prot opt in     out      source          destination

Chain OUTPUT (policy ACCEPT 2 packets, 401 bytes)
pkts bytes target      prot opt in     out      source          destination

Chain POSTROUTING (policy ACCEPT 2 packets, 401 bytes)
pkts bytes target      prot opt in     out      source          destination

root@ubuntu-server:/etc#
```