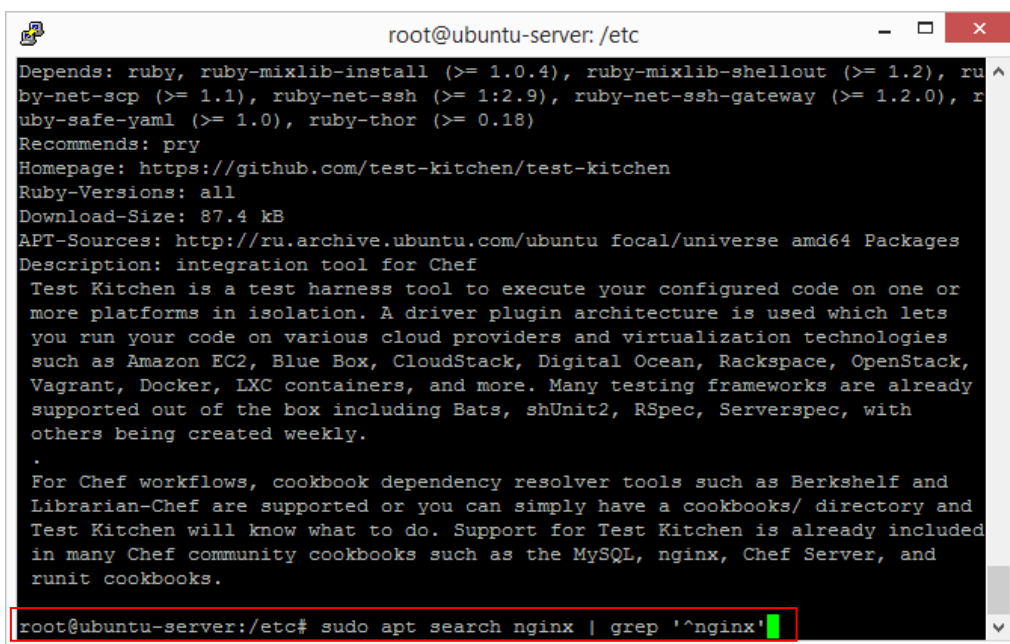


Практическое задание по уроку №7 «Управление пакетами и репозиториями. Основы сетевой безопасности»

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

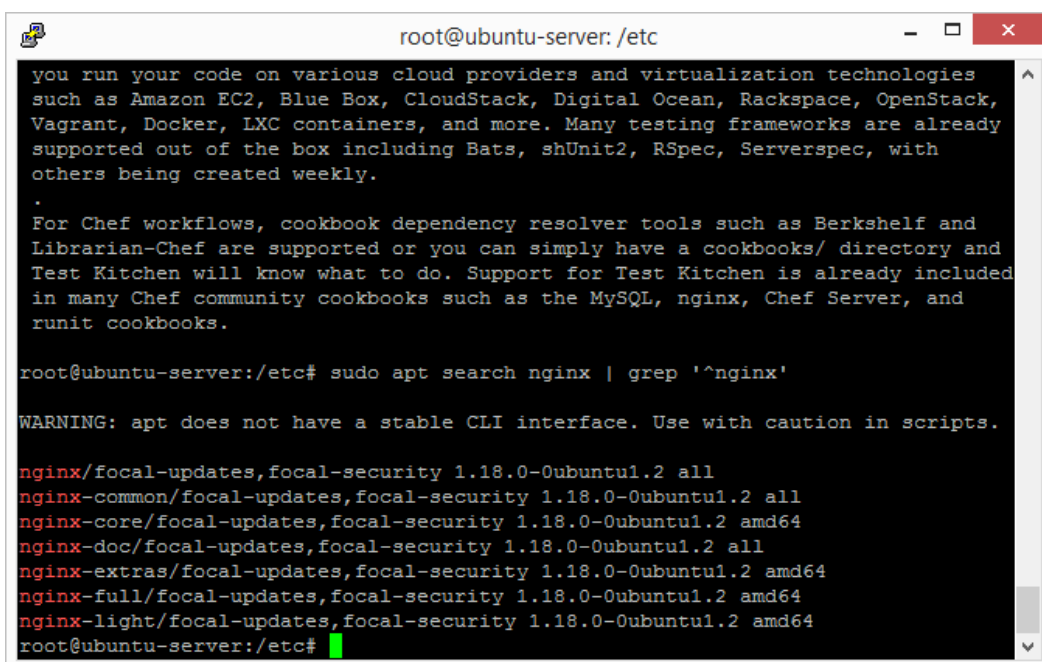
Решение

- Первоначально произведем поиск имеющихся репозиториях, включающих пакет nginx. Для этого введем команду `sudo 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
ruby-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 репозиториях 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 --get-selections | grep 'nginx'
root@ubuntu-server:/etc# dpkg --get-selections | grep nginx
root@ubuntu-server:/etc# dpkg --get-selections | 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 --get-selections | grep 'nginx'
root@ubuntu-server:/etc# dpkg --get-selections | grep nginx
root@ubuntu-server:/etc# dpkg --get-selections | 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. ii 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 --get-selections | 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 --get-selections | 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 --get-selections | 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 --get-selections | 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 --get-selections | 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 --get-selections | 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 --get-selections | 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        chronoszcz    -          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# 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        chronoszcz    -          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# 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
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# 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" \
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" |
foobar2000 1.6.7 from Taqi 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

```

root@ubuntu-server: /etc
root@ubuntu-server:/etc# snap list
Name          Version  Rev  Tracking  Publis
her  Notes
bare          1.0      5    latest/stable canoni
cal✓ base
core18        20210722 2128  latest/stable canoni
cal✓ base
core20        20210702 1081  latest/stable canoni
cal✓ base
foobar2000    1.6.7    392  latest/stable mmtrt
gnome-3-28-1804 3.28.0-19-g98f9e67.98f9e67 161  latest/stable canoni
cal✓ -
gtk-common-themes 0.1-59-g7bca6ae 1519  latest/stable canoni
cal✓ -
lxd           4.0.7    21545  4.0/stable/... canoni
cal✓ -
snapd         2.51.7    13170  latest/stable canoni
cal✓ snapd
wine-platform-6-stable 6.0.1 8  latest/stable mmtrt
-
wine-platform-runtime v1.0 249  latest/stable mmtrt
-
root@ubuntu-server:/etc#

```

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
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
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
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
      tcp dpt:22
    0     0          tcp --  ACCEPT *      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 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
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
      tcp dpt:22
    0     0          tcp --  ACCEPT *      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 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
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
      tcp dpt:22
    0     0          tcp -- ACCEPT *      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 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          tcp -- ACCEPT *      0.0.0.0/0  0.0.0.0/0
      tcp dpt:22
    0     0          tcp -- ACCEPT *      0.0.0.0/0  0.0.0.0/0
      tcp dpt:80
    0     0 REJECT      tcp -- *      0.0.0.0/0  0.0.0.0/0
      tcp dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unrea
chable
    0     0          tcp -- 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

0      0      tcp  --  ACCEPT *      0.0.0.0/0      0.0.0.0/0
      tcp dpt:22
0      0      tcp  --  ACCEPT *      0.0.0.0/0      0.0.0.0/0
      tcp dpt:80
0      0 REJECT  tcp  --  *      *      0.0.0.0/0      0.0.0.0/0
      tcp dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unrea
chable
0      0      tcp  --  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# 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

0      0 REJECT  tcp  --  *      *      0.0.0.0/0      0.0.0.0/0
      tcp dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unrea
chable
0      0      tcp  --  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# 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

pkts bytes target      prot opt in      out      source      destination
0      0      tcp dpt:22          tcp  --  ACCEPT *      0.0.0.0/0    0.0.0.0/0
0      0      tcp 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
tcp dpt:22 flags:0x17/0x02 #conn src/32 > 3 reject-with icmp-port-unrea
chable
0      0      tcp dpt:80          tcp  --  DROP  *      0.0.0.0/0    0.0.0.0/0
0      0      tcp dpt:80          tcp  --  ACCEPT *      0.0.0.0/0    0.0.0.0/0
0      0      tcp dpt:80          tcp  --  ACCEPT *      0.0.0.0/0    0.0.0.0/0
0      0      tcp dpt:8080         tcp  --  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 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
tcp dpt:80 redir 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#

```