

# Лабораторная работа №3

Тема «Настройка DHCP-сервера»

по дисциплине «Администрирование сетевых подсистем»

Выполнил: Щербак Маргарита Романовна

Студент группы: НПИбд-02-21

«14» ноября 2023г.

## **Цель работы:**

Приобретение практических навыков по установке и конфигурированию DHCP-сервера.

## Задание

1. Установить на виртуальной машине server DHCP-сервер.
2. Настроить виртуальную машину server в качестве DHCP-сервера для виртуальной внутренней сети.
3. Проверить корректность работы DHCP-сервера в виртуальной внутренней сети путём запуска виртуальной машины client и применения соответствующих утилит диагностики.
4. Настроить обновление DNS-зоны при появлении в виртуальной внутренней сети новых узлов.
5. Проверить корректность работы DHCP-сервера и обновления DNS-зоны в виртуальной внутренней сети путём запуска виртуальной машины client и применения соответствующих утилит диагностики.
6. Написать скрипт для Vagrant, фиксирующий действия по установке и настройке DHCP-сервера во внутреннем окружении виртуальной машины server. Соответствующим образом внести изменения в Vagrantfile.

# Выполнение работы

## Установка DHCP-сервера

```
C:\Work\mrshcherbak\vagrant>vagrant up server
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Clearing any previously set forwarded ports...
==> server: Clearing any previously set network interfaces...
==> server: Preparing network interfaces based on configuration...
server: Adapter 1: nat
server: Adapter 2: intnet
==> server: Forwarding ports...
server: 22 (guest) => 2222 (host) (adapter 1)
==> server: Running 'pre-boot' VM customizations...
==> server: Booting VM...
==> server: Waiting for machine to boot. This may take a few minutes...
Address: 127.0.0.1:2222
Username: vagrant
Auth method: password
```

```
root@server:~
[mrshcherbak@server ~]$ sudo -i
[sudo] password for mrshcherbak:
[root@server.mrshcherbak.net ~]# dnf -y install dhcp-server
Extra Packages for Enterprise Linux 9 - x86_64 36 kB/s | 30 kB 00:00
Extra Packages for Enterprise Linux 9 - x86_64 9.1 MB/s | 19 MB 00:02
Rocky Linux 9 - BaseOS 3.1 kB/s | 4.1 kB 00:01
Rocky Linux 9 - AppStream 6.9 kB/s | 4.5 kB 00:00
Rocky Linux 9 - Extras 3.9 kB/s | 2.9 kB 00:00
Dependencies resolved.
=====
Package Architecture Version Repository Size
=====
Installing:
dhcp-server x86_64 12:4.4.2-18.b1.el9 baseos 1.2 M
Installing dependencies:
dhcp-common noarch 12:4.4.2-18.b1.el9 baseos 128 k
Transaction Summary
=====
Install 2 Packages

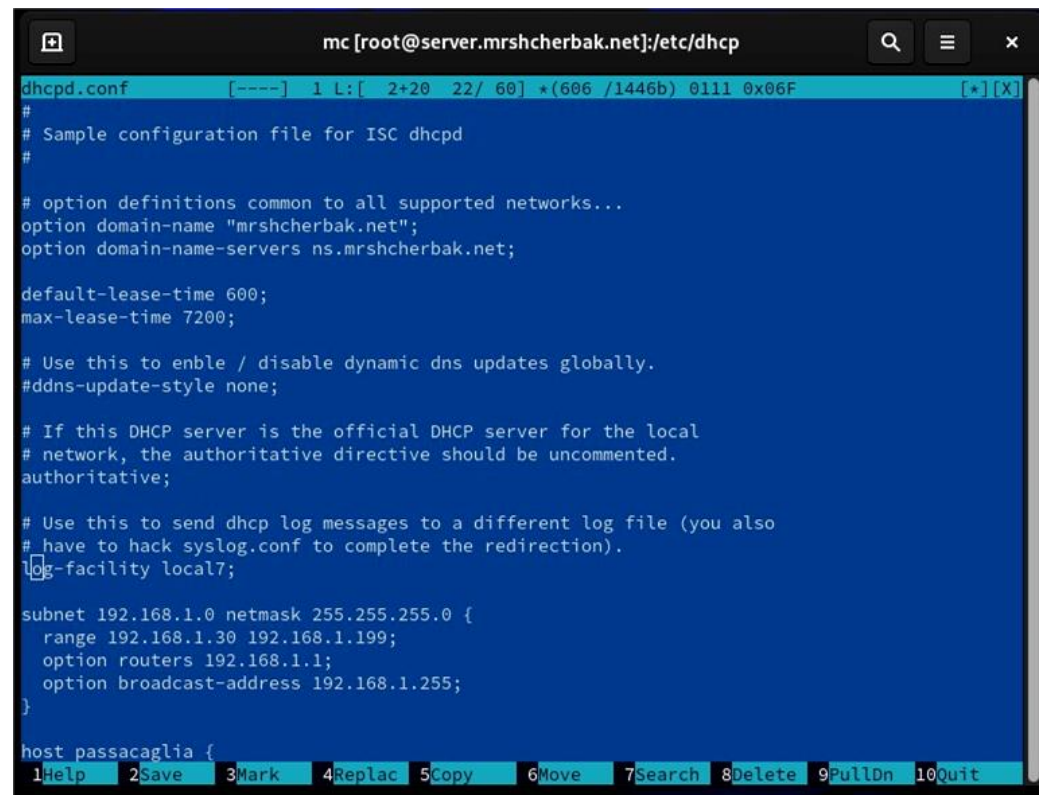
Total download size: 1.3 M
Installed size: 4.2 M
Downloading Packages:
```

Установка dhcp

# Конфигурирование DHCP-сервера

```
[root@server.mrshcherbak.net ~]# cd /etc/dhcp
[root@server.mrshcherbak.net dhcp]# cp /usr/share/doc/dhcp*/dhcpd.conf.example /etc/dhcp
[root@server.mrshcherbak.net dhcp]# mv /etc/dhcp/dhcpd.conf.example /etc/dhcp/dhcpd.conf
mv: overwrite '/etc/dhcp/dhcpd.conf'? y
[root@server.mrshcherbak.net dhcp]#
```

## Редактирование файла /etc/dhcp/dhcpd.conf



```
mc [root@server.mrshcherbak.net]:/etc/dhcp
dhcpd.conf [----] 1 L: [ 2+20 22/ 60] *(606 /1446b) 0111 0x06F [*][X]
#
# Sample configuration file for ISC dhcpd
#
# option definitions common to all supported networks...
option domain-name "mrshcherbak.net";
option domain-name-servers ns.mrshcherbak.net;

default-lease-time 600;
max-lease-time 7200;

# Use this to enable / disable dynamic dns updates globally.
#ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;

# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
log-facility local7;

subnet 192.168.1.0 netmask 255.255.255.0 {
    range 192.168.1.30 192.168.1.199;
    option routers 192.168.1.1;
    option broadcast-address 192.168.1.255;
}

host passacaglia {
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit
```

Настроила привязку dhcpd к интерфейсу eth1 виртуальной машины server

```
[root@server.mrshcherbak.net dhcp]# cp /lib/systemd/system/dhcpd.service /etc/systemd/system/
```

```
mc [root@server.mrshcherbak.net]:/etc/systemd/system
dhcpd.service  [-----] 1 L: [ 1+11 12/ 17] *(319 / 475b) 0069 0x045
[Unit]
Description=DHCPv4 Server Daemon
Documentation=man:dhcpd(8) man:dhcpd.conf(5)
Wants=network-online.target
After=network-online.target
After=time-sync.target

[Service]
Type=notify
EnvironmentFile=-/etc/sysconfig/dhcpd
ExecStart=/usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid eth1
#ExecStart=/usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd -group dhcpd --no-pid $DHCPDARGS
StandardError=null

[Install]
WantedBy=multi-user.target

1help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9Pul
```

```
[root@server.mrshcherbak.net ~]# systemctl --system daemon-reload
[root@server.mrshcherbak.net ~]# systemctl enable dhcpd
Created symlink /etc/systemd/system/multi-user.target.wants/dhcpd.service → /etc/systemd/system/dhcpd.service.
[root@server.mrshcherbak.net ~]#
```

Редактирование файла прямой DNS-зоны  
/var/named/master/fz/mrshcherbak.net

```
mc [root@server.mrshcherbak.net]
/var/named/master/fz/mrshcherbak.net
$TTL 1D
@      IN SOA  @ server.mrshcherbak.net. (
        2023111200      ; serial
        1D              ; refresh
        1H              ; retry
        1W              ; expire
        3H )            ; minimum
NS     @
A      192.168.1.1
$ORIGIN mrshcherbak.net.
server A      192.168.1.1
ns     A      192.168.1.1
dhcp   A      192.168.1.1
```

## Редактирование файла обратной зоны /var/named/master/rz/192.168.1

```
Activities Terminal
mc [root@server.mrshcherbak.net]:/var/named/master/rz
192.168.1 [-----] 45 L:[ 1+13 14/ 14] *(300 / 300b) <EOF>
$TTL 1D
@<----->IN SOA<@ server.mrshcherbak.net. (
<-----><----->2023111200<----->; serial
<-----><----->1D<-----><----->; refresh
<-----><----->1H<-----><----->; retry
<-----><----->1W<-----><----->; expire
<-----><----->3H )<-----><----->; minimum
<----->NS<----->@
<----->A<----->192.168.1.1
<----->PTR<----->server.mrshcherbak.net.
$ORIGIN 1.168.192.in-addr.arpa.
1<----->PTR<-----><----->server.mrshcherbak.net.
1<----->PTR<-----><----->ns.mrshcherbak.net.
1<----->PTR<-----><----->dhcp.mrshcherbak.net.
```

```
root@server:~
[root@server.mrshcherbak.net ~]# systemctl restart named
[root@server.mrshcherbak.net ~]# ping dhcp.mrshcherbak.net
PING dhcp.mrshcherbak.net (192.168.1.1) 56(84) bytes of data.
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=1 ttl=64 time=0.202 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=2 ttl=64 time=0.053 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=3 ttl=64 time=0.172 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=4 ttl=64 time=0.161 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=5 ttl=64 time=0.078 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=6 ttl=64 time=0.139 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=7 ttl=64 time=0.120 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=8 ttl=64 time=0.077 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=9 ttl=64 time=0.078 ms
64 bytes from server.mrshcherbak.net (192.168.1.1): icmp_seq=10 ttl=64 time=0.094 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=11 ttl=64 time=0.074 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=12 ttl=64 time=0.241 ms
64 bytes from server.mrshcherbak.net (192.168.1.1): icmp_seq=13 ttl=64 time=0.108 ms
64 bytes from dhcp.mrshcherbak.net.1.168.192.in-addr.arpa (192.168.1.1): icmp_seq=14 ttl=64 time=0.096 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=15 ttl=64 time=0.074 ms
64 bytes from server.mrshcherbak.net (192.168.1.1): icmp_seq=16 ttl=64 time=0.066 ms
64 bytes from ns.mrshcherbak.net (192.168.1.1): icmp_seq=17 ttl=64 time=0.055 ms
```



## Внесла изменения в настройки межсетевого экрана узла server, разрешив работу с DHCP

```
root@server:~  
[root@server.mrshcherbak.net ~]# firewall-cmd --list-services  
cockpit dhcpv6-client dns ssh  
[root@server.mrshcherbak.net ~]# firewall-cmd --get-services  
RH-Satellite-6 RH-Satellite-6-capsule afp amanda-client amanda-k5-client amqp amqps apcupsd a  
udit ausweisapp2 bacula bacula-client bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitcoin-test  
net-rpc bittorrent-lsd ceph ceph-mon cfengine checkmk-agent cockpit collectd condor-collector  
cratedb ctdb dhcp dhcpv6 dhcpv6-client distcc dns dns-over-tls docker-registry docker-swarm  
dropbox-lansync elasticsearch etcd-client etcd-server finger foreman foreman-proxy freeipa-4  
freeipa-ldap freeipa-ldaps freeipa-replication freeipa-trust ftp galera ganglia-client gangli  
a-master git gpsd grafana gre high-availability http http3 https ident imap imaps ipfs ipp ip  
p-client ipsec irc ircs iscsi-target isns jellyfin jenkins kadmin kdeconnect kerberos kibana  
klogin kpasswd kprop kshell kube-api kube-apiserver kube-control-plane kube-control-plane-sec  
ure kube-controller-manager kube-controller-manager-secure kube-nodeport-services kube-schedu  
ler kube-scheduler-secure kube-worker kubelet kubelet-readonly kubelet-worker ldap ldaps libv  
irt libvirt-tls lightning-network llmnr llmnr-tcp llmnr-udp managesieve matrix mdns memcache  
minidlna mongodb mosh mountd mqtt mqtt-tls ms-wbt mssql murmur mysql nbd netbios-ns netdata-d  
ashboard nfs nfs3 nmea-0183 nrpe ntp nut openvpn ovirt-imageio ovirt-storageconsole ovirt-vmc  
onsole plex pmcd pmpoxy pmwebapi pmwebapis pop3 pop3s postgresql privoxy prometheus promethe  
us-node-exporter proxy-dhcp ps3netsrv ptp pulseaudio puppetmaster quassel radius rdp redis re  
dis-sentinel rpc-bind rquotad rsh rsyncd rtp salt-master samba samba-client samba-dc sane si  
p sips slp smtp smtp-submission smtps snmp snmptls snmptls-trap snmptrap spideroak-lansync sp  
otify-sync squid ssdp ssh steam-streaming svdrp svn syncthing syncthing-gui synergy syslog sy  
slog-tls telnet tentacle tftp tile38 tinc tor-socks transmission-client upnp-client vdsu vnc-  
server wbem-http wbem-https wireguard ws-discovery ws-discovery-client ws-discovery-tcp ws-di  
scovery-udp wsman wsmans xdmcp xmpp-bosh xmpp-client xmpp-local xmpp-server zabbix-agent zabb  
ix-server zerotier  
[root@server.mrshcherbak.net ~]# firewall-cmd --add-service=dhcp  
success  
[root@server.mrshcherbak.net ~]# firewall-cmd --add-service=dhcp --permanent  
success  
[root@server.mrshcherbak.net ~]#
```

## Восстановила контекст безопасности в SELinux

```
[root@server.mrshcherbak.net ~]# restorecon -vR /var/named  
[root@server.mrshcherbak.net ~]# restorecon -vR /var/lib/dhcpd/  
[root@server.mrshcherbak.net ~]# systemctl start dhcpd  
[root@server.mrshcherbak.net ~]#
```

```
Nov 12 12:56:22 server named[7712]: network unreachable resolving 'g.ntps.org/AAAA/IN': 2604:1380:4601:5501::2:1#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving 'g.ntps.org/AAAA/IN': 2604:1380:31:5200::1#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving 'g.ntps.org/AAAA/IN': 2604:1380:31:5200::1#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a0b:4341:1500:142:5054:ff:fe5b:ba1c#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a0d:5440::40#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a04:1fc0:1000:400::42#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2604:a880:4:1d0:375:7000#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2620:95:4002::23#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2600:3c00::f03c:91ff:fe8c:cf2c#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving 'g.ntps.org/AAAA/IN': 2600:3c00::f03c:91ff:fe8c:cf2c#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving 'g.ntps.org/AAAA/IN': 2600:3c00::f03c:91ff:fe8c:cf2c#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2604:1380:1001:6005:161:1#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a07:b9c0:f001:3a2:5054:ff:fe83:a2ff#53  
Nov 12 12:56:22 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a03:7900:1041::2#53  
Nov 12 12:56:23 server dhcpd[7886]: DHCPREQUEST for 192.168.1.30 from 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:56:23 server dhcpd[7886]: DHCPACK on 192.168.1.30 to 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:56:36 server dhcpd[7886]: DHCPREQUEST for 192.168.1.30 from 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:56:36 server dhcpd[7886]: DHCPACK on 192.168.1.30 to 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:57:01 server dhcpd[7886]: DHCPREQUEST for 192.168.1.30 from 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:57:01 server dhcpd[7886]: DHCPACK on 192.168.1.30 to 08:00:27:7a:0f:4f (client) via eth1  
Nov 12 12:58:05 server named[7712]: network unreachable resolving 'mirrors.fedoraproject.org/AAAA/IN': 2001:4178:2:1269:dead:beef:cafe:fed5#53  
Nov 12 12:58:05 server named[7712]: network unreachable resolving 'mirrors.fedoraproject.org/AAAA/IN': 2001:4178:2:1269:dead:beef:cafe:fed5#53  
Nov 12 12:58:05 server named[7712]: network unreachable resolving 'mirrors.fedoraproject.org/AAAA/IN': 2001:4178:2:1269:dead:beef:cafe:fed5#53  
Nov 12 12:58:05 server named[7712]: network unreachable resolving 'mirrors.fedoraproject.org/AAAA/IN': 2001:4178:2:1269:dead:beef:cafe:fed5#53  
Nov 12 12:58:05 server named[7712]: network unreachable resolving 'ns-ia02.fedoraproject.org/AAAA/IN': 2001:500:48:1#53  
Nov 12 12:58:12 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a03:b0c0:1d0:fe:f001#53  
Nov 12 12:58:12 server named[7712]: network unreachable resolving '2.rocky.pool.ntp.org/AAAA/IN': 2a03:7900:1041::2#53  
Nov 12 12:58:24 server journal[3324]: Can't update stage views actor MetaWindowGroup is on because it needs an allocation.  
Nov 12 12:58:24 server journal[3324]: Can't update stage views actor MetaWindowActorX11 is on because it needs an allocation.  
Nov 12 12:58:24 server journal[3324]: Can't update stage views actor MetaSurfaceActorX11 is on because it needs an allocation.
```

## Мониторинг происходящих в системе процессов в реальном времени



# Анализ работы DHCP-сервера

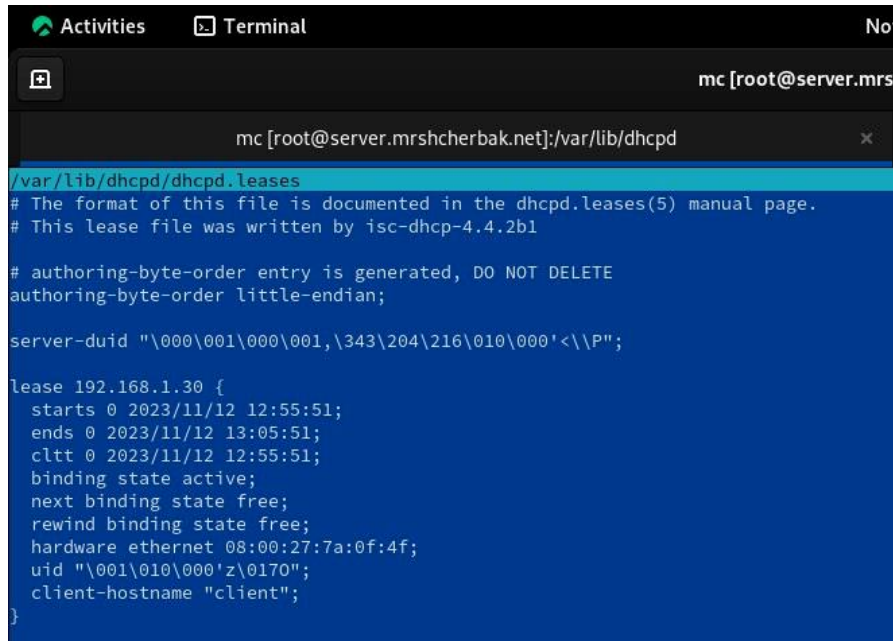
```
C:\Work\mrshcherbak\vagrant\provision\client\01-routing.sh - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запуск П...
01-routing.sh
1  #!/bin/bash
2
3  echo "Provisioning script $0"
4
5  nmcli connection modify "System eth1" ipv4.gateway "192.168.1.1"
6  nmcli connection up "System eth1"
7
8  nmcli connection modify eth0 ipv4.never-default true
9  nmcli connection modify eth0 ipv6.never-default true
10
11 nmcli connection down eth0
12 nmcli connection up eth0
13
14 # systemctl restart NetworkManager
15
```

```
*C:\Work\mrshcherbak\vagrant\Vagrantfile - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запуск Плагины Вклад
01-routing.sh Vagrantfile
74 client.ssh.password = 'vagrant'
75
76 client.vm.network :private_network,
77                   type: "dhcp",
78                   virtualbox____intnet: true
79
80 client.vm.provision "client dummy",
81                   type: "shell",
82                   preserve_order: true,
83                   path: "provision/client/01-dummy.sh"
84
85 client.vm.provision "client routing",
86                   type: "shell",
87                   preserve_order: true,
88                   run: "always",
89                   path: "provision/client/01-routing.sh"
90
91 client.vm.provider :virtualbox do |v|
92   v.linked_clone = true
93   # Customize the amount of memory on the VM
94   v.memory = 1024
95   v.cpus = 1
96   v.name = "client"
```

## Запуск машины client

```
C:\Work\mrshcherbak\vagrant>vagrant up client --provision
Bringing machine 'client' up with 'virtualbox' provider...
==> client: Clearing any previously set forwarded ports...
==> client: Fixed port collision for 22 => 2222. Now on port 2200.
==> client: Clearing any previously set network interfaces...
==> client: Preparing network interfaces based on configuration...
client: Adapter 1: nat
client: Adapter 2: intnet
==> client: Forwarding ports...
client: 22 (guest) => 2200 (host) (adapter 1)
==> client: Running 'pre-boot' VM customizations...
==> client: Booting VM...
==> client: Waiting for machine to boot. This may take a few minutes.
client: SSH address: 127.0.0.1:2200
```

Вывод команды `ifconfig` предоставляет информацию о сетевых интерфейсах на устройстве



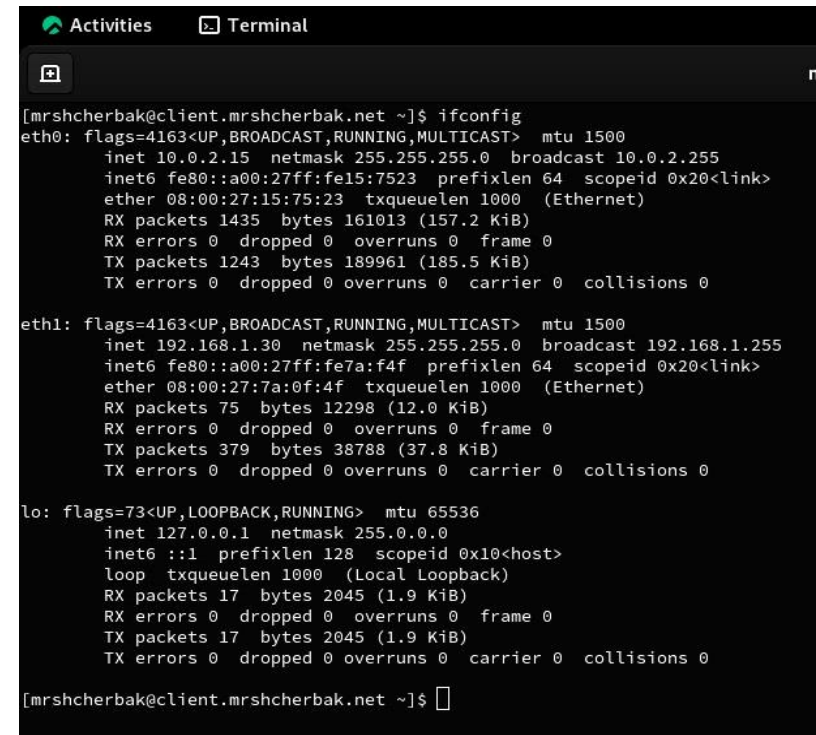
```
mc [root@server.mrshcherbak.net]:/var/lib/dhcpd
/var/lib/dhcpd/dhcpd.leases
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.4.2b1

# authoring-byte-order entry is generated, DO NOT DELETE
authoring-byte-order little-endian;

server-uid "\000\001\000\001,\343\204\216\010\000'\P";

lease 192.168.1.30 {
    starts 0 2023/11/12 12:55:51;
    ends 0 2023/11/12 13:05:51;
    cltt 0 2023/11/12 12:55:51;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 08:00:27:7a:0f:4f;
    uid "\001\010\000'z\0170";
    client-hostname "client";
}
```

Информация о работе DHCP-сервера



```
[mrshcherbak@client.mrshcherbak.net ~]$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::a00:27ff:fe15:7523 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:15:75:23 txqueuelen 1000 (Ethernet)
    RX packets 1435 bytes 161013 (157.2 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1243 bytes 189961 (185.5 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.30 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::a00:27ff:fe7a:f4f prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:7a:0f:4f txqueuelen 1000 (Ethernet)
    RX packets 75 bytes 12298 (12.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 379 bytes 38788 (37.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 17 bytes 2045 (1.9 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 17 bytes 2045 (1.9 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[mrshcherbak@client.mrshcherbak.net ~]$
```

# Настройка обновления DNS-зоны

```
Activities Terminal
mc [root@server.mrshcherbak.net]:/etc/named
mrshcherbak.net [----] 31 L:[ 1+ 3 4/ 12] *(101 / 222b) 0049 0
zone "mrshcherbak.net" IN {
<----->type master;
<----->file "master/fz/mrshcherbak.net";
<----->allow-update { 127.0.0.1; };
};

zone "1.168.192.in-addr.arpa" IN {
<----->type master;
<----->file "master/rz/192.168.1";
<----->allow-update { 127.0.0.1; };
};
```

Перезапуск DHCP-сервера прошёл успешно

```
Activities Terminal
mc [root@server.mrshcherbak.net]:/var/named/master/fz
Left File Command Options Right
< /var/named/master/fz .[^]>
.n Name Size Modify time
/.. UP--DIR Nov 9 13:17
mrshcherbak.net 495 Nov 12 13:22
mrshcherbak.net.jnl 827 Nov 12 13:21
```

```
Activities Terminal
mc [root@server.mrshcherbak.net]:/etc/dhcp
dhcpd.conf [B---] 0 L:[ 11+13 24/ 69] *(531 /1643b) 0010 0x00A
max-lease-time 7200;

# Use this to enable / disable dynamic dns updates globally.
ddns-updates on;
ddns-update-style interim;
ddns-domainname "mrshcherbak.net.";
ddns-rev-domainname "in-addr.arpa.";
zone mrshcherbak.net. {
primary 127.0.0.1;
}
zone 1.168.192.in-addr.arpa. {
primary 127.0.0.1;
}

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;

# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
log-facility local7;

subnet 192.168.1.0 netmask 255.255.255.0 {
range 192.168.1.30 192.168.1.199;
option routers 192.168.1.1;
option broadcast-address 192.168.1.255;
}

host passacaglia {
1Help 2Save 3Mark 4Replac 5Copy
```

# Анализ работы DHCP-сервера после настройки обновления DNS-зоны

убедилась в наличии DNS-записи о клиенте в прямой DNS-зоне

```
[mrshcherbak@client.mrshcherbak.net ~]$ dig @192.168.1.1 client.mrshcherbak.net

; <<>> DiG 9.16.23-RH <<>> @192.168.1.1 client.mrshcherbak.net
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 34010
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 3f865e4dbdcce5d1010000006550d237e0247d1cd0607318 (good)
;; QUESTION SECTION:
;client.mrshcherbak.net.                IN      A

;; ANSWER SECTION:
client.mrshcherbak.net. 300      IN      A      192.168.1.30

;; Query time: 0 msec
;; SERVER: 192.168.1.1#53(192.168.1.1)
;; WHEN: Sun Nov 12 13:25:11 UTC 2023
;; MSG SIZE rcvd: 95

[mrshcherbak@client.mrshcherbak.net ~]$
```

## Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.mrshcherbak.net fz]# cd /vagrant/provision/server
[root@server.mrshcherbak.net server]# mkdir -p /vagrant/provision/server/dhcp/etc/dhcp
[root@server.mrshcherbak.net server]# mkdir -p /vagrant/provision/server/dhcp/etc/systemd/system
[root@server.mrshcherbak.net server]# cp -R /etc/dhcp/dhcpd.conf /vagrant/provision/server/dhcp/etc/dhcp/
[root@server.mrshcherbak.net server]# cp -R /etc/systemd/system/dhcpd.service /vagrant/provision/server/dhcp/etc/systemd/system/
[root@server.mrshcherbak.net server]# cd /vagrant/provision/server/dns/
[root@server.mrshcherbak.net dns]# cp -R /var/named/* /vagrant/provision/server/dns/var/named/
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/mrshcherbak.net'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? yes
```



Этот скрипт повторяет произведённые мной действия по установке и настройке DHCP-сервера

```
Activities Terminal
mc [root@server.mrshcherbak.net]:/vagrant/provision/server
/vagrant/provision/server/dhcp.sh
#!/bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y install dhcp-server

echo "Copy configuration files"
cp -R /vagrant/provision/server/dhcp/etc/* /etc

chown -R dhcpd:dhcpd /etc/dhcp

restorecon -vR /etc
restorecon -vR /var/lib/dhcpd

echo "Configure firewall"
firewall-cmd --add-service=dhcp
firewall-cmd --add-service=dhcp --permanent

echo "Start dhcpd service"
systemctl --system daemon-reload
systemctl enable dhcpd
systemctl start dhcpd
```

```
C:\Work\mrshcherbak\vagrant\Vagrantfile - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запу
01-routing.sh Vagrantfile
26 server.vm.hostname = 'server'
27
28 server.vm.boot_timeout = 1440
29
30 server.ssh.insert_key = false
31 server.ssh.username = 'vagrant'
32 server.ssh.password = 'vagrant'
33
34 server.vm.network :private_network,
35     ip: "192.168.1.1",
36     virtualbox__intnet: true
37
38 server.vm.provision "server dummy",
39     type: "shell",
40     preserve_order: true,
41     path: "provision/server/01-dummy.sh"
42
43 server.vm.provision "server dns",
44     type: "shell",
45     preserve_order: true,
46     path: "provision/server/dns.sh"
47
48 server.vm.provision "server dhcp",
49     type: "shell",
50     preserve_order: true,
51     path: "provision/server/dhcp.sh"
52
53 server.vm.provider :virtualbox do |v|
54     v.linked_clone = true
55     # Customize the amount of memory on the VM
56     v.memory = 1024
57     v.cpus = 1
58     v.name = "server"
```

**Вывод:** таким образом, в ходе выполнения л/р №3, я приобрела практические навыки по установке и конфигурированию DHCP-сервера.