

# Лаборатория работа 3

## Настройка DHCP-сервера

ПОДГОТОВИЛА: КИМ РЕАЧНА  
ГРУППА: НПИБД-02-20

# Цель работы:

Приобретение практических навыков по установке и конфигурированию DHCP-сервера.

# Задание:

- Установка DHCP-сервера
- Конфигурирование DHCP-сервера
- Анализ работы DHCP-сервера
- Настройка обновления DNS-зоны
- Анализ работы DHCP-сервера после настройки обновления DNS зоны
- Внесение изменений в настройки внутреннего окружения виртуальной машины

# Установка DHCP-сервера

```
PS C:\work\kreachna\vagrant> vagrant up server
==> vagrant: A new version of Vagrant is available: 2.3.3 (installed version: 2.3.2)!
==> vagrant: To upgrade visit: https://www.vagrantup.com/downloads.html
```

```
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 [kreachna@server.kreachna.net ~]$ sudo -i
```

```
==> server: This is very often used [sudo] password for kreachna:
```

```
==> server: network to not work prop [root@server.kreachna.net ~]# dnf -y install dhcp-server
```

```
==> server: properly, try changing th Extra Packages for Enterprise Linux 9 - x86_64 11 kB/s | 17 kB 00:01
```

```
==> server: Clearing any previously s Extra Packages for Enterprise Linux 9 - x86_64 3.3 MB/s | 11 MB 00:03
```

```
==> server: Clearing any previously s Rocky Linux 9 - BaseOS 4.3 kB/s | 3.6 kB 00:00
```

```
Rocky Linux 9 - AppStream 5.1 kB/s | 3.6 kB 00:00
```

```
Rocky Linux 9 - Extras 4.3 kB/s | 2.9 kB 00:00
```

```
Dependencies resolved.
```

```
=====
```

Package	Architecture	Version	Repository	Size
---------	--------------	---------	------------	------

```
=====
```

```
Installing:
```

dhcp-server	x86_64	12:4.4.2-15.b1.el9	baseos	1.2 M
-------------	--------	--------------------	--------	-------

```
Installing dependencies:
```

dhcp-common	noarch	12:4.4.2-15.b1.el9	baseos	128 k
-------------	--------	--------------------	--------	-------

# Конфигурирование DHCP-сервера

```
root@server:/etc/dhcp x mc [root@server.kreachna.net]:/etc/systemd/system x
dhcpd.service [-M- -] 92 L:[ 1+10 11/ 16] *(317 / 375b) 0010 0x00A [*]
[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/dhcpd.conf
StandardError=null

[Install]
WantedBy=multi-user.target

root@server:/etc/dhcp x mc [root@server.kreachna.net]:/var/named/master/rz x
192.168.1 [-M- -] 34 L:[ 1+13 14/ 14] *(291 / 291b) <EOF> [*]
$TTL 1D
@<----->IN SOA<-->@ server.kreachna.net. (
<-----><-----><-----><-----><----->2022111600<----->; serial
<-----><-----><-----><-----><----->1D<----->; refresh
<-----><-----><-----><-----><----->1H<----->; retry
<-----><-----><-----><-----><----->1W<----->; expire
<-----><-----><-----><-----><----->3H )<-->; minimum
<----->NS<----->@
<----->A<----->192.168.1.1
<----->PTR<---->server.kreachna.net.
$ORIGIN 1.168.192.in-addr.arpa.
1<----->PTR<---->server.kreachna.net.
1<----->PTR<---->ns.kreachna.net.
1<----->PTR<---->dhcp.kreachna.net.█
```



# Анализ работы DHCP-сервера

```
Nov 16 11:49:41 server dhcpd[6821]: DHCPREQUEST for 192.168.1.30 from 08:00:27:83:06:b8 on interface eth0
Nov 16 11:49:41 server dhcpd[6821]: DHCPACK on 192.168.1.30 to 08:00:27:83:06:b8 on interface eth0
Nov 16 11:49:52 server dhcpd[6821]: DHCPREQUEST for 192.168.1.30 from 08:00:27:83:06:b8 on interface eth0
Nov 16 11:49:52 server dhcpd[6821]: DHCPACK on 192.168.1.30 to 08:00:27:83:06:b8 on interface eth0
```

root@server:/vagrant/provision/c... x mc [root@server.kreachna.net]:/v...

```
/var/lib/dhcpd/dhcpd.leases
# The format of this file is documented in the dhcpd.leases(5)
# 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+\007\204\253\010\000'\233E\270";

lease 192.168.1.30 {
    starts 3 2022/11/16 11:49:18;
    ends 3 2022/11/16 11:59:18;
    cltt 3 2022/11/16 11:49:18;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 08:00:27:83:06:b8;
    uid "\001\010\000'\203\006\270";
    client-hostname "client";
```

kreachna@client:~

```
kreachna@client.kreachna.net ~]$ ifconfig
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:fe5c:b0b8 prefixlen 64 scopeid 0x20<eth>
ether 08:00:27:5c:b0:b8 txqueuelen 1000 (Ethernet)
RX packets 1571 bytes 176678 (172.5 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1554 bytes 230198 (224.8 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

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:fe83:6b8 prefixlen 64 scopeid 0x20<eth>
ether 08:00:27:83:06:b8 txqueuelen 1000 (Ethernet)
RX packets 52 bytes 7868 (7.6 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 341 bytes 35630 (34.7 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lags=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
```

# Настройка обновления DNS-зоны

root@server:/vagrant/provision/c... x

mc [root@server.kreachna.net]:/...

dhcpd.conf [-M- -] 0 L:[ 11+23 34/ 46] \*(809 / 969b)

max-lease-time 7200;

# Use this to enable / disable dynamic dns updates globally.

ddns-updates on;

ddns-update-style interim;

ddns-domainname "kreachna.net.;"

ddns-rev-domainname "in-addr.arpa.;"

zone kreachna.net. {

primary 127.0.0.1;

}

zone 1.168.192.in-addr.

primary 127.0.0.1;

1

root@server:/vagrant/provision/c... x

mc [root@server.kreachna.net]:/v... x

root@server:~ x

Left File Command Options Right

<- /var/named/master/fz .[^]>

.n	Name	Size	Modify	time
/..		UP- -DIR	Nov 12	18:18
	kreachna.net	241	Nov 16	11:14
	kreachna.net.jnl	803	Nov 16	12:09

<- /etc/systemd/system .[^]>

.n	Name	Size	Modify	time
	/bluetooth.target.wants	31	Nov 12	13:20
	/default.target.wants	45	Nov 12	13:21
	/dev-virtio\x2d~.device.wants	38	Nov 12	13:21
	/getty.target.wants	32	Nov 12	13:11
	/graphical.target.wants	181	Nov 12	13:21
	/local-fs.target.wants	36	Nov 12	13:20
	/multi-user.target.wants	4096	Nov 16	11:07
	/network-online.target.wants	48	Nov 12	13:11
	/printer.target.wants	26	Nov 12	13:21

# Анализ работы DHCP-сервера после настройки обновления DNS зоны

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

; <<>> DiG 9.16.23-RH <<>> @192.168.1.1 client.kreachna.net
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 12304
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 1c941c652b107d81010000006374d45386553bfd0d30693e (good)
;; QUESTION SECTION:
;client.kreachna.net.          IN      A

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

;; Query time: 1 msec
;; SERVER: 192.168.1.1#53(192.168.1.1)
;; WHEN: Wed Nov 16 12:15:12 UTC 2022
;; MSG SIZE  rcvd: 92
```



# Внесение изменений в настройки внутреннего окружения виртуальной машины

```
C:\work\kreachna\vagrant\provision\server\dhcp.sh - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
dns.sh Vagrantfile 01-routing.sh dhcp.sh
1  #!/bin/bash
2
3  echo "Provisioning script $0"
4
5  echo "Install needed packages"
6  dnf -y install dhcp-server
7
8  echo "Copy configuration files"
9  cp -R /vagrant/provision/server/dhcp/etc/* /etc
10
11 chown -R dhcpd:dhcpd /etc/dhcp
12
13 restorecon -vR /etc
14 restorecon -vR /var/lib/dhcpd
15
16 echo "Configure firewall"
17 firewall-cmd --add-service=dhcp
18 firewall-cmd --add-service=dhcp --permanent
19
20 echo "Start dhcpd service"
21 systemctl --system daemon-reload
22 systemctl enable dhcpd
23 systemctl start dhcpd
```

```
C:\work\kreachna\vagrant\Vagrantfile - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run
dns.sh Vagrantfile 01-routing.sh dhcp.sh
40  server.vm.provision "server dns",
41      type: "shell",
42      preserve_order: true,
43      path: "provision/server/dns.sh"
44
45  server.vm.provision "server dhcp",
46      type: "shell",
47      preserve_order: true,
48      path: "provision/server/dhcp.sh"
```



# Вывод

Получила приобретенные практические навыки по установке и конфигурированию DHCP-сервера.

**Спасибо за внимание!**