Отчет лабораторной работы 3

Администрирование сетевых подсистем

Тема: Настройка DHCP-сервера

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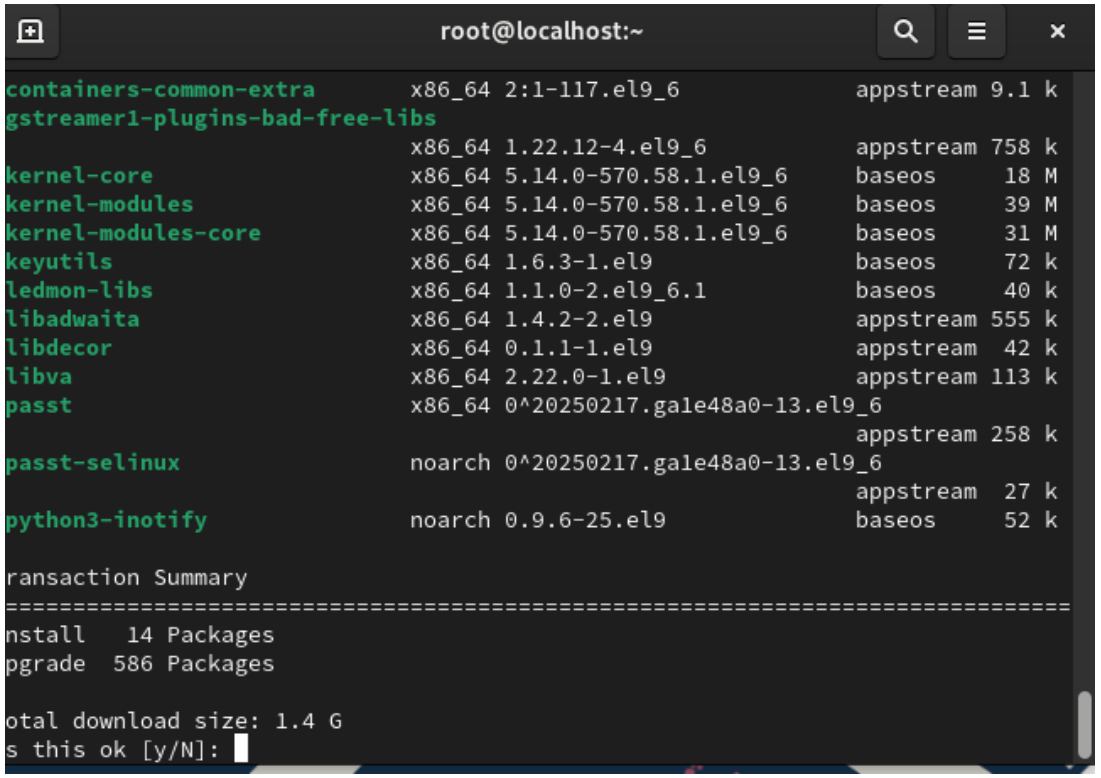
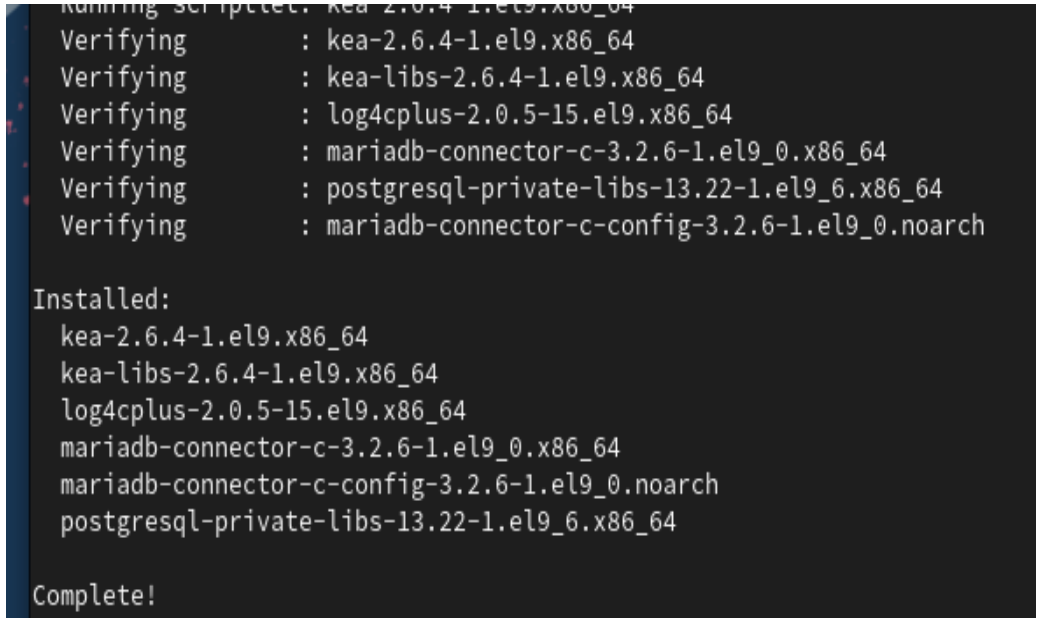
Приобретение практических навыков по установке и конфигурированию DHCP сервера.

Установка DHCP-сервера





Конфигурирование DHCP-сервера

```
2025-11-13 11:55:12.005 INFO  [kea-dhcp4.hosts/3233.140516217915520] HOSTS_BACKE
NDS_REGISTERED the following host backend types are available: mysql postgresql
2025-11-13 11:55:12.005 WARN  [kea-dhcp4.dhcpsrv/3233.140516217915520] DHCPSRV_M
T_DISABLED_QUEUE_CONTROL disabling dhcp queue control when multi-threading is en
abled.
2025-11-13 11:55:12.005 WARN  [kea-dhcp4.dhcp4/3233.140516217915520] DHCP4_RESER
VATIONS_LOOKUP_FIRST_ENABLED Multi-threading is enabled and host reservations lo
okup is always performed first.
2025-11-13 11:55:12.005 INFO  [kea-dhcp4.dhcpsrv/3233.140516217915520] DHCPSRV_C
FGMGR_NEW_SUBNET4 a new subnet has been added to configuration: 192.168.1.0/24 w
ith params: valid-lifetime=4000
2025-11-13 11:55:12.005 INFO  [kea-dhcp4.dhcpsrv/3233.140516217915520] DHCPSRV_C
FGMGR_SOCKET_TYPE_SELECT using socket type raw
2025-11-13 11:55:12.005 INFO  [kea-dhcp4.dhcpsrv/3233.140516217915520] DHCPSRV_C
FGMGR_ADD_IFACE listening on interface eth1
2025-11-13 11:55:12.005 INFO  [kea-dhcp4.dhcpsrv/3233.140516217915520] DHCPSRV_C
FGMGR_SOCKET_TYPE_DEFAULT "dhcp-socket-type" not specified , using default socke
t type raw
[root@localhost.user.net ~]#
```

```
  GNU nano 5.6.1                  /etc/kea/kea-dhcp4.conf                  Mod
    },
    {
      "name": "domain-name-servers",
      "data": "192.168.1.1"
    }
  ],

  "subnet4": [
    {
      "id": 1,
      /* specify subnet that DHCP is used */
      "subnet": "192.168.1.0/24",
      /* specify the range of IP addresses to be leased */
      "pools": [ { "pool": "192.168.1.30 - 192.168.1.199" } ],
      "option-data": [
        {
          /* specify your gateway */
          "name": "routers",
          "data": "192.168.1.1"
        }
      ]
    }
  ]
}

File Name to Write: /etc/kea/kea-dhcp4.conf
```

```
[root@localhost.user.net ~]# systemctl --system daemon-reload
[root@localhost.user.net ~]# systemctl enable kea-dhcp4.service
Created symlink /etc/systemd/system/multi-user.target.wants/kea-dhcp4.service →
/usr/lib/systemd/system/kea-dhcp4.service.
[root@localhost.user.net ~]#
```

```
        A       192.168.1.1
$ORIGIN astakhovamd.net.
server          A       192.168.1.1
ns      A       192.168.1.1
dhcp    A       192.168.1.1
```

root@localhost:~

```
  GNU nano 5.6.1          /var/named/master/fz/astakhovamd.net
$TTL 1D
@       IN SOA          @ server.astakhovamd.net. (
                        2024072700      ; serial
                        1D              ; refresh
                        1H              ; retry
                        1W              ; expire
                        3H )            ; minimum
        NS      @
        A       192.168.1.1
$ORIGIN astakhovamd.net.
server          A       192.168.1.1
ns      A       192.168.1.1
dhcp    A       192.168.1.1
```

Анализ работы DHCP-сервера

```
[astakhovamd@localhost.user.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:fe69:a8d  prefixlen 64  scopeid 0x20<link>
        inet6 fd17:625c:f037:2:a00:27ff:fe69:a8d  prefixlen 64  scopeid 0x0<global>
        ether 08:00:27:69:0a:8d  txqueuelen 1000  (Ethernet)
        RX packets 1843  bytes 209223 (204.3 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1702  bytes 231903 (226.4 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

```
#!/bin/bash

 echo "Provisioning script $0"

 nmcli connection modify "eth1" ipv4.gateway "192.168.1.1"
 nmcli connection up "eth1"

 nmcli connection modify eth0 ipv4.never-default true
 nmcli connection modify eth0 ipv6.never-default true

 nmcli connection down eth0
 nmcli connection up eth0

 # systemctl restart NetworkManager
```

```
                      preserve_order: true,
                      path: "provision/client/01-dummy.sh"

    client.vm.provision "client routing",
                      type: "shell",
                      preserve_order: true,
                      run: "always",
                      path: "provision/client/01-routing.sh"
  end
end
```

root@localhost:/var/lib/kea × root@localhost:~ ×

```
      {
        "name": "domain-search",
        "data": "astakhovamd.net"
      },
      {
        "name": "domain-name", // Часто используется вместе с domain-search
        "data": "astakhovamd.net"
      },
      {
        "name": "domain-name-servers",
        "data": "192.168.1.1"
      }
    ],

    "subnet4": [
      {
        "id": 1,
        /* specify subnet that DHCP is used */
        "subnet": "192.168.1.0/24",
        /* specify the range of IP addresses to be leased */
        "pools": [ { "pool": "192.168.1.30 - 192.168.1.199" } ],
        "option-data": [
          {
            /* specify your gateway */
            "name": "routers",
            "data": "192.168.1.1"
          }
        ]
      }
    ]
  }
}
[root@localhost.user.net ~]#
```

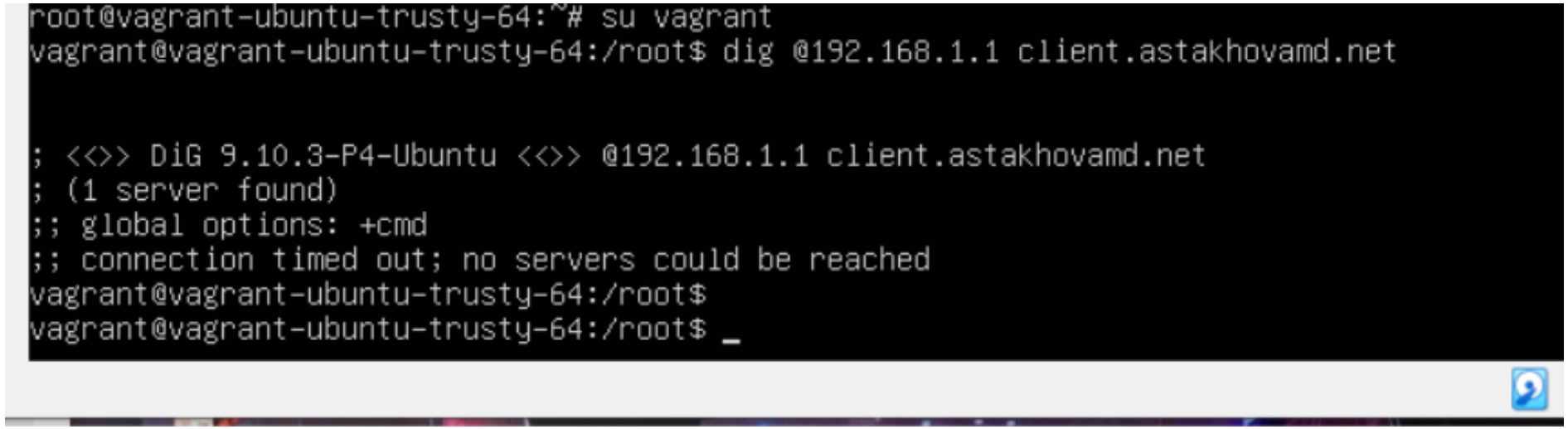
Настройка обновления DNS-зоны

```
{
  "Dhcp4": {
    "interfaces-config": {
      "interfaces": [ "eth1"]
    },
    "lease-database": {
      "type": "memfile",
      "persist": true,
      "name": "/var/lib/kea/dhcp4.leases"
    },
    "valid-lifetime": 4000,

    "option-data": [
      {
        "name": "domain-search",
        "data": "astakhovamd.net"
      },
      {
         "name": "domain-name",
        "data": "astakhovamd.net"
      },
      {
         "name": "domain-name-servers",
        "data": "192.168.1.1"
      }
    ],

    "dhcp-ddns": {
      "enable-updates": true
    },
    "ddns-qualifying-suffix": "astakhovamd.net",
    "ddns-override-client-update": true,
```

```
[root@localhost.user.net kea]# kea-dhcp4 -t /etc/kea/kea-dhcp4.conf
2025-11-13 14:55:19.371 INFO  [kea-dhcp4.hosts/5791.140421168659776] HOSTS_BACKENDS_REGISTERED the foll
owing host backend types are available: mysql postgresql
2025-11-13 14:55:19.371 WARN  [kea-dhcp4.dhcpsrv/5791.140421168659776] DHCPSRV_MT_DISABLED_QUEUE_CONTRO
L disabling dhcp queue control when multi-threading is enabled.
2025-11-13 14:55:19.371 WARN  [kea-dhcp4.dhcp4/5791.140421168659776] DHCP4_RESERVATIONS_LOOKUP_FIRST_EN
ABLED Multi-threading is enabled and host reservations lookup is always performed first.
2025-11-13 14:55:19.371 INFO  [kea-dhcp4.dhcpsrv/5791.140421168659776] DHCPSRV_CFGMGR_NEW_SUBNET4 a new
 subnet has been added to configuration: 192.168.1.0/24 with params: valid-lifetime=4000
2025-11-13 14:55:19.371 INFO  [kea-dhcp4.dhcpsrv/5791.140421168659776] DHCPSRV_CFGMGR_SOCKET_TYPE_SELEC
T using socket type raw
2025-11-13 14:55:19.371 INFO  [kea-dhcp4.dhcpsrv/5791.140421168659776] DHCPSRV_CFGMGR_ADD_IFACE listeni
ng on interface eth1
2025-11-13 14:55:19.371 INFO  [kea-dhcp4.dhcpsrv/5791.140421168659776] DHCPSRV_CFGMGR_SOCKET_TYPE_DEFAU
LT "dhcp-socket-type" not specified , using default socket type raw
[root@localhost.user.net kea]#
```

```
[root@localhost.user.net ~]# dig @192.168.1.1 client.astakhovamd.net

; <<>> DiG 9.16.23-RH <<>> @192.168.1.1 client.astakhovamd.net
; (1 server found)
;; global options: +cmd
;; connection timed out; no servers could be reached
```

Анализ работы DHCP-сервера после настройки обновления DNS-зоны



Внесение изменений в настройки внутреннего окружения виртуальной машины

```
  end

  server.vm.provision "server dhcp",
                              type: "shell",
                              preserve_order: true,
                              path: "provision/server/dhcp.sh"
  end

## Client configuration
```

```
#!/bin/bash
echo "Provisioning script $0"
echo "Install needed packages"
dnf -y install kea
echo "Copy configuration files"
cp -R /vagrant/provision/server/dhcp/etc/kea/* /etc/kea/
echo "Fix permissions"
chown -R kea:kea /etc/kea
chmod 640 /etc/kea/tsig-keys.json
restorecon -vR /etc
restorecon -vR /var/lib/kea
echo "Configure firewall"
firewall-cmd --add-service dhcp
firewall-cmd --add-service dhcp --permanent
echo "Start dhcpd service"
systemctl --system daemon-reload
systemctl enable --now kea-dhcp4.service
systemctl enable --now kea-dhcp-ddns.service
```