

# Lab 11 – Konfiguracja i zarządzanie serwerami DHCP i DNS

## 1. Wymagania Wstępne

1. .
2. .
3. . Laboratoria będą wykonywane na VirtualBox
4. .

```
Administrator: Windows PowerShell (x86)
PS C:\Users\Użytkownik\Desktop\routinglab> VBoxManage modifyvm vm2 --nic3 nat
PS C:\Users\Użytkownik\Desktop\routinglab>
```

5. .
6. moja karta nazywała się enp0s9; VM2 i VM1 mają dostęp do 8.8.8.8

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm1:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=53 time=15.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=53 time=18.4 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=53 time=16.1 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=53 time=14.5 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 7ms
rtt min/avg/max/mdev = 14.531/16.125/18.354/1.410 ms
root@vm1:~#

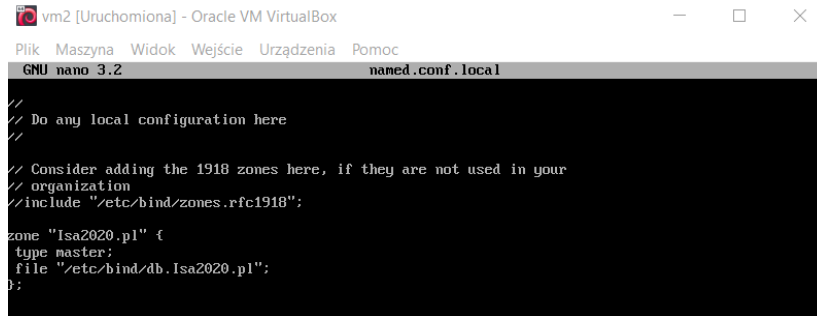
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm2:~# ip ad
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:54:00:00:00:21 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global eth0
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:54:00:00:00:23 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.102/24 brd 10.0.2.255 scope global eth1
        valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:9f:94:62 brd ff:ff:ff:ff:ff:ff
    inet 10.0.4.15/24 brd 10.0.4.255 scope global dynamic enp0s9
        valid_lft 86050sec preferred_lft 86050sec
root@vm2:~# iptables -t nat -A POSTROUTING -o enp0s9 -j MASQUERADE
root@vm2:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=54 time=14.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=54 time=15.3 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=54 time=24.5 ms
^C
--- 8.8.8.8 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 6ms
rtt min/avg/max/mdev = 14.689/18.178/24.502/4.480 ms
root@vm2:~#
```

## 2. Instalacja serwera DNS

1. .

```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm2:~# apt update
Hit:1 http://deb.debian.org/debian buster InRelease
Hit:2 http://security.debian.org buster/updates InRelease
Hit:3 http://deb.debian.org/debian buster-updates InRelease
Hit:4 http://deb.debian.org/debian buster-backports InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
27 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@vm2:~# apt install -y bind9 bind9utils bind9-doc dnstools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  dns-root-data libirs161 python3-ply
Suggested packages:
  resolvconf nftc rblcheck python-ply-doc
The following NEW packages will be installed:
  bind9 bind9-doc bind9utils dns-root-data dnstools libirs161 python3-ply
0 upgraded, 7 newly installed, 0 to remove and 27 not upgraded.
Need to get 2106 kB of archives.
After this operation, 7093 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian buster/main amd64 python3-ply all 3.11-3 [65.1 kB]
Get:2 http://deb.debian.org/debian buster/main amd64 bind9utils amd64 1:9.11.5.P4+dfsg-5.1 [432 kB]
Get:3 http://deb.debian.org/debian buster/main amd64 dns-root-data all 2019031302 [5396 B]
Get:4 http://deb.debian.org/debian buster/main amd64 bind9 amd64 1:9.11.5.P4+dfsg-5.1 [634 kB]
Get:5 http://deb.debian.org/debian buster/main amd64 bind9-doc all 1:9.11.5.P4+dfsg-5.1 [49.8 kB]
Get:6 http://deb.debian.org/debian buster/main amd64 libirs161 amd64 1:9.11.5.P4+dfsg-5.1 [49.8 kB]
Get:7 http://deb.debian.org/debian buster/main amd64 dnstools all 1:9.11.5.P4+dfsg-5.1 [49.8 kB]
Fetched 2106 kB in 1s (2106 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
root@vm2:~#
```

2. .
3. .



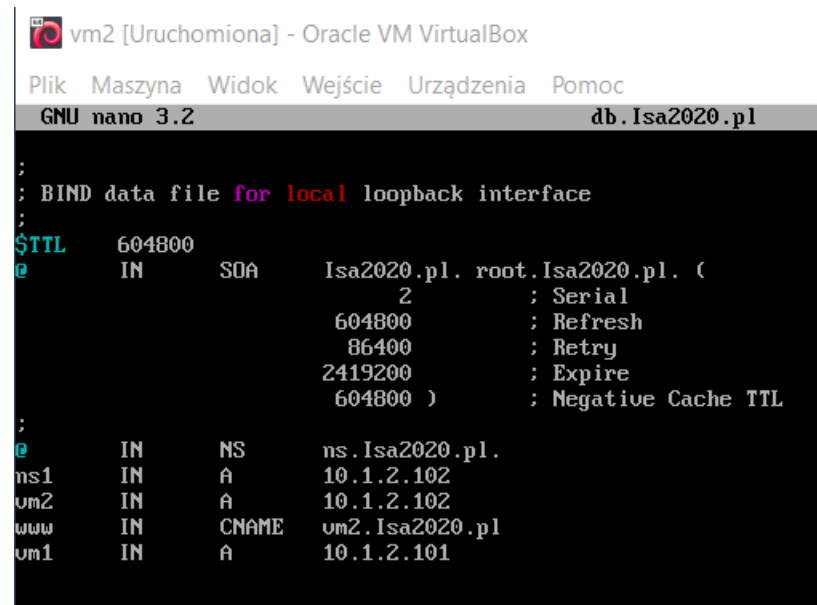
```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 named.conf.local

//
// Do any local configuration here
//

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";

zone "Isa2020.pl" {
    type master;
    file "/etc/bind/db.Isa2020.pl";
};
```

4. .kopia została utworzona o nazwie db.Isa2020.pl
5. .
  - a. .
  - b. .

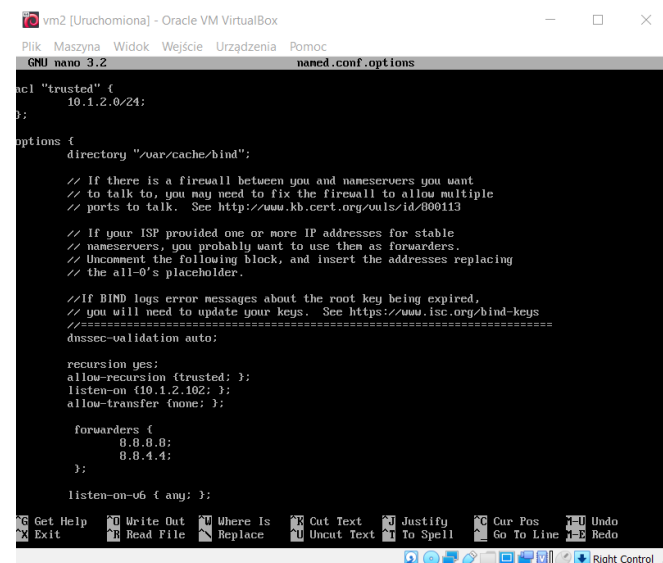


```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 db.Isa2020.pl

;
; BIND data file for local loopback interface
;
$TTL      604800
IN        SOA      Isa2020.pl. root.Isa2020.pl. (
                                2      ; Serial
                                604800  ; Refresh
                                86400   ; Retry
                                2419200 ; Expire
                                604800 ) ; Negative Cache TTL
;

@         IN       NS      ns.Isa2020.pl.
ns1       IN       A       10.1.2.102
vm2       IN       A       10.1.2.102
www       IN       CNAME   vm2.Isa2020.pl
vm1       IN       A       10.1.2.101
```

- c. .



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 named.conf.options

acl "trusted" {
    10.1.2.0/24;
};

options {
    directory "/var/cache/bind";

    // If there is a firewall between you and nameservers you want
    // to talk to, you may need to fix the firewall to allow multiple
    // ports to talk. See http://www.kb.cert.org/vuls/id/800113

    // If your ISP provided one or more IP addresses for stable
    // nameservers, you probably want to use them as forwarders.
    // Uncomment the following block, and insert the addresses replacing
    // the all-0's placeholder.

    // If BIND logs error messages about the root key being expired,
    // you will need to update your keys. See https://www.isc.org/bind-keys
    //=====
    dnssec-validation auto;

    recursion yes;
    allow-recursion {trusted; };
    listen-on {10.1.2.102; };
    allow-transfer {none; };

    forwarders {
        0.0.0.0;
        0.0.0.0;
    };

    listen-on-v6 { any; };
};
```

6. Wystąpił problem o braku recordu dla ns1.Isa2020.pl → literówka "ns" zamiast "ns1"

```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

root@vm2:/etc/bind# systemctl restart bind9
root@vm2:/etc/bind# systemctl status bind9
bind9.service - BIND Domain Name Server
Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled)
Active: active (running) since Tue 2020-05-19 20:21:46 CEST; 2s ago
Docs: man:named(8)
Process: 1975 ExecStart=/usr/sbin/named $OPTIONS (code=exited, status=0/SUCCESS)
Main PID: 1976 (named)
Tasks: 4 (limit: 394)
Memory: 11.1M
CGroup: /system.slice/bind9.service
└─1976 /usr/sbin/named -u bind

May 19 20:21:46 vm2 named[1976]: zone Isa2020.pl/IN: loaded serial 2
May 19 20:21:46 vm2 named[1976]: zone 127.in-addr.arpa/IN: loaded serial 1
May 19 20:21:46 vm2 named[1976]: zone 255.in-addr.arpa/IN: loaded serial 1
May 19 20:21:46 vm2 named[1976]: zone localhost/IN: loaded serial 2
May 19 20:21:46 vm2 named[1976]: all zones loaded
May 19 20:21:46 vm2 systemd[1]: Started BIND Domain Name Server.
May 19 20:21:46 vm2 named[1976]: running
May 19 20:21:46 vm2 named[1976]: zone Isa2020.pl/IN: sending notifies (serial 2)
May 19 20:21:46 vm2 named[1976]: managed-keys-zone: Key 20326 for zone . acceptance timer complete:
May 19 20:21:46 vm2 named[1976]: resolver priming query complete
lines 1-21/21 (END)
root@vm2:/etc/bind#
```

7. ostawiono nameserver na 10.1.2.102  
8. Wszystkie testy wykonały się poprawnie, oprócz pingowania strony www → zabrakło "." po vm2.Isa2020.pl, po tym zaczęło działać

```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

root@vm2:/etc/bind# nslookup ns1.Isa2020.pl
Server:      10.1.2.102
Address:     10.1.2.102#53

Name:   ns1.Isa2020.pl
Address: 10.1.2.102

root@vm2:/etc/bind# dig um1.Isa2020.pl

; <<> DiG 9.11.5-P4-5.1-Debian <<> um1.Isa2020.pl
;; global options: +cmd
;; Got answer:
;; -->HEADER<-- opcode: QUERY, status: NOERROR, id: 15621
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 2
;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags: udg: 4096
;; COOKIE: 871c564864c674c14f2e73f5ec42475c94a038882e9d643 (good)
;; QUESTION SECTION:
;um1.Isa2020.pl.                IN      A
;; ANSWER SECTION:
um1.Isa2020.pl.                 604800  IN      A      10.1.2.101
;; AUTHORITY SECTION:
Isa2020.pl.                     604800  IN      NS      ns1.Isa2020.pl.
;; ADDITIONAL SECTION:
ns1.Isa2020.pl.                 604800  IN      A      10.1.2.102

;; Query time: 0 msec
;; SERVER: 10.1.2.102#53(10.1.2.102)
;; WHEN: Tue May 19 20:24:53 CEST 2020
;; MSG SIZE rcvd: 121

root@vm2:/etc/bind#

root@vm2:/etc/bind# host vm2.Isa2020.pl
vm2.Isa2020.pl has address 10.1.2.102
root@vm2:/etc/bind# ping vm2.Isa2020.pl
PING vm2.Isa2020.pl (10.1.2.102) 56(84) bytes of data:
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=1 ttl=64 time=0.010 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=2 ttl=64 time=0.022 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=3 ttl=64 time=0.022 ms
^C
-- vm2.Isa2020.pl ping statistics --
3 packets transmitted, 3 received, 0% packet loss, time 52ms
rtt min/avg/max/mdev = 0.010/0.018/0.022/0.005 ms
root@vm2:/etc/bind# ping um1.Isa2020.pl
PING um1.Isa2020.pl (10.1.2.101) 56(84) bytes of data:
64 bytes from 10.1.2.101 (10.1.2.101): icmp_seq=1 ttl=64 time=0.480 ms
64 bytes from 10.1.2.101 (10.1.2.101): icmp_seq=2 ttl=64 time=0.398 ms
64 bytes from 10.1.2.101 (10.1.2.101): icmp_seq=3 ttl=64 time=0.429 ms
^C
-- um1.Isa2020.pl ping statistics --
3 packets transmitted, 3 received, 0% packet loss, time 52ms
rtt min/avg/max/mdev = 0.398/0.435/0.480/0.041 ms
root@vm2:/etc/bind# ping www.Isa2020.pl
ping: www.Isa2020.pl: Name or service not known
root@vm2:/etc/bind#
```

```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm2:/etc/bind# ping www.Isa2020.pl
PING vm2.Isa2020.pl (10.1.2.102) 56(84) bytes of data.
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=1 ttl=64 time=0.008 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=2 ttl=64 time=0.022 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=3 ttl=64 time=0.025 ms
^C
--- vm2.Isa2020.pl ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 33ms
rtt min/avg/max/mdev = 0.008/0.018/0.025/0.008 ms
root@vm2:/etc/bind#
```

9. VM1 brakowało pliku resolv.conf → zostało stworzone za pomocą komendy touch

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm1:~# host vm2.Isa2020.pl
vm2.Isa2020.pl has address 10.1.2.102
root@vm1:~# ping vm2.Isa2020.pl
PING vm2.Isa2020.pl (10.1.2.102) 56(84) bytes of data.
64 bytes from vm2 (10.1.2.102): icmp_seq=1 ttl=64 time=0.097 ms
64 bytes from vm2 (10.1.2.102): icmp_seq=2 ttl=64 time=0.018 ms
64 bytes from vm2 (10.1.2.102): icmp_seq=3 ttl=64 time=0.018 ms
^C
--- vm2.Isa2020.pl ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 28ms
rtt min/avg/max/mdev = 0.097/0.014/0.018/0.006 ms
root@vm1:~# ping vm2.Isa2020.pl
PING vm2.Isa2020.pl (10.1.2.102) 56(84) bytes of data.
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=1 ttl=64 time=0.389 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=2 ttl=64 time=0.414 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=3 ttl=64 time=0.423 ms
^C
--- vm2.Isa2020.pl ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 29ms
rtt min/avg/max/mdev = 0.389/0.408/0.423/0.027 ms
root@vm1:~# ping www.Isa2020.pl
PING vm2.Isa2020.pl (10.1.2.102) 56(84) bytes of data.
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=1 ttl=64 time=0.354 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=2 ttl=64 time=0.434 ms
64 bytes from 10.1.2.102 (10.1.2.102): icmp_seq=3 ttl=64 time=0.472 ms
^C
--- vm2.Isa2020.pl ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 34ms
rtt min/avg/max/mdev = 0.354/0.420/0.472/0.049 ms
root@vm1:~#
```

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm1:~# nslookup ns1.Isa2020.pl
Server:      10.1.2.102
Address:     10.1.2.102#53

Name:   ns1.Isa2020.pl
Address: 10.1.2.102

root@vm1:~# dig vm1.Isa2020.pl

<<>> DiG 9.11.5-P4-5.1-Debian <<>> vm1.Isa2020.pl
; global options: +cmd
; Got answer:
;->HEADER<- opcode: QUERY, status: NOERROR, id: 17766
; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 2

; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:;, udp: 4096
; COOKIE: bba5991bb1391c03d34bbd745ec42a4ab125dd09c93cf608 (good)
; QUESTION SECTION:
vm1.Isa2020.pl.                IN      A

; ANSWER SECTION:
vm1.Isa2020.pl.                604800  IN      A      10.1.2.101

; AUTHORITY SECTION:
sa2020.pl.                     604800  IN      NS      ns1.Isa2020.pl.

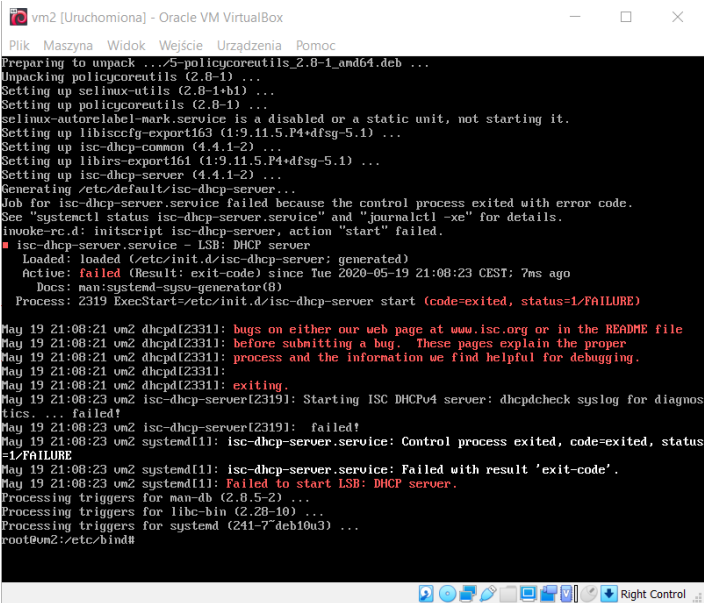
; ADDITIONAL SECTION:
ns1.Isa2020.pl.                604800  IN      A      10.1.2.102

; Query time: 0 msec
; SERVER: 10.1.2.102#53(10.1.2.102)
; WHEN: Tue May 19 22:49:46 CEST 2020
; MSG SIZE rcvd: 121

root@vm1:~#
```

### 3. Instalacja serwera DHCP

1. .

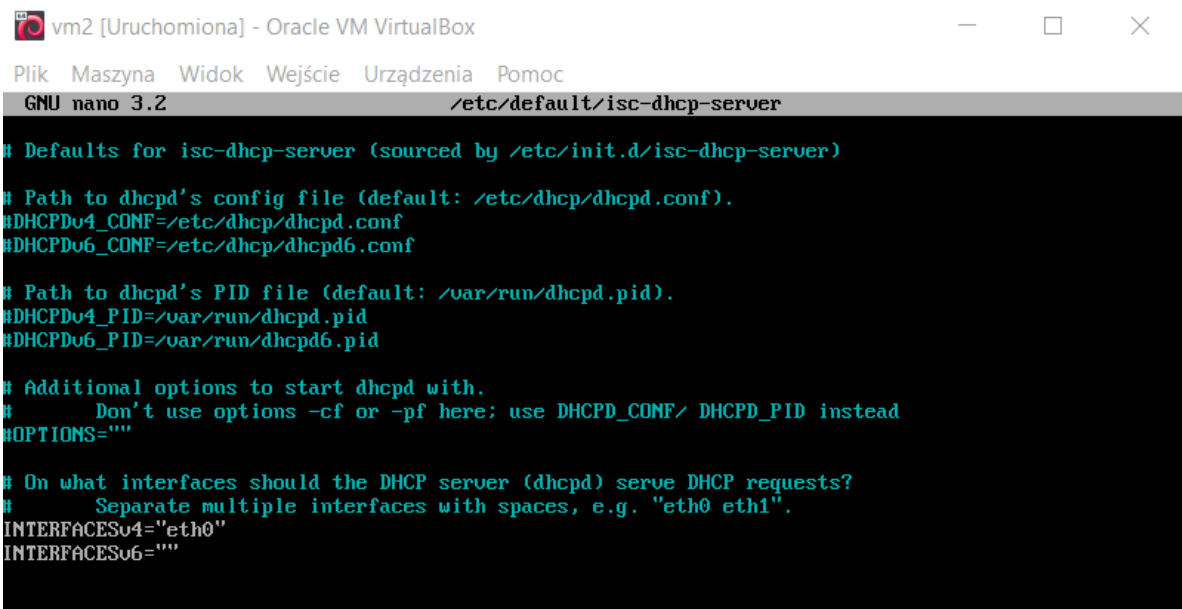


```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
Preparing to unpack .../5-policycoreutils_2.8-1_and64.deb ...
Unpacking policycoreutils (2.8-1) ...
Setting up policycoreutils (2.8-1) ...
selinux-autorelabel-mark.service is a disabled or a static unit, not starting it.
Setting up libiscfg-export163 (1:9.11.5.P4+dfsg-5.1) ...
Setting up isc-dhcp-common (4.4.1-2) ...
Setting up libirs-export161 (1:9.11.5.P4+dfsg-5.1) ...
Setting up isc-dhcp-server (4.4.1-2) ...
Generating /etc/default/isc-dhcp-server...
Job for isc-dhcp-server.service failed because the control process exited with error code.
See "systemctl status isc-dhcp-server.service" and "journalctl -xe" for details.
invoke-rc.d: initscript isc-dhcp-server, action "start" failed.
■ isc-dhcp-server.service - LSB: DHCP server
   Loaded: loaded (/etc/init.d/isc-dhcp-server; generated)
   Active: failed (Result: exit-code) since Tue 2020-05-19 21:08:23 CEST; 7ms ago
   Docs: man:systemd-sysv-generator(8)
  Process: 2319 ExecStart=/etc/init.d/isc-dhcp-server start (code=exited, status=1/FAILURE)

May 19 21:08:21 vm2 dhcpd[23311]: bugs on either our web page at www.isc.org or in the README file
May 19 21:08:21 vm2 dhcpd[23311]: before submitting a bug. These pages explain the proper
May 19 21:08:21 vm2 dhcpd[23311]: process and the information we find helpful for debugging.
May 19 21:08:21 vm2 dhcpd[23311]: exiting.
May 19 21:08:23 vm2 isc-dhcp-server[2319]: Starting ISC DHCPv4 server: dhcpdcheck syslog for diagnos
tics... failed!
May 19 21:08:23 vm2 isc-dhcp-server[2319]: failed!
May 19 21:08:23 vm2 systemd[1]: isc-dhcp-server.service: Control process exited, code=exited, status
=1/FAILURE
May 19 21:08:23 vm2 systemd[1]: isc-dhcp-server.service: Failed with result 'exit-code'.
May 19 21:08:23 vm2 systemd[1]: Failed to start LSB: DHCP server.
Processing triggers for man-db (2.8.5-2) ...
Processing triggers for libc-bin (2.28-10) ...
Processing triggers for systemd (241-7+deb10u3) ...
root@vm2:~#
```

2. .

a. sieć na którą zmienilem to eth0



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 /etc/default/isc-dhcp-server

# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

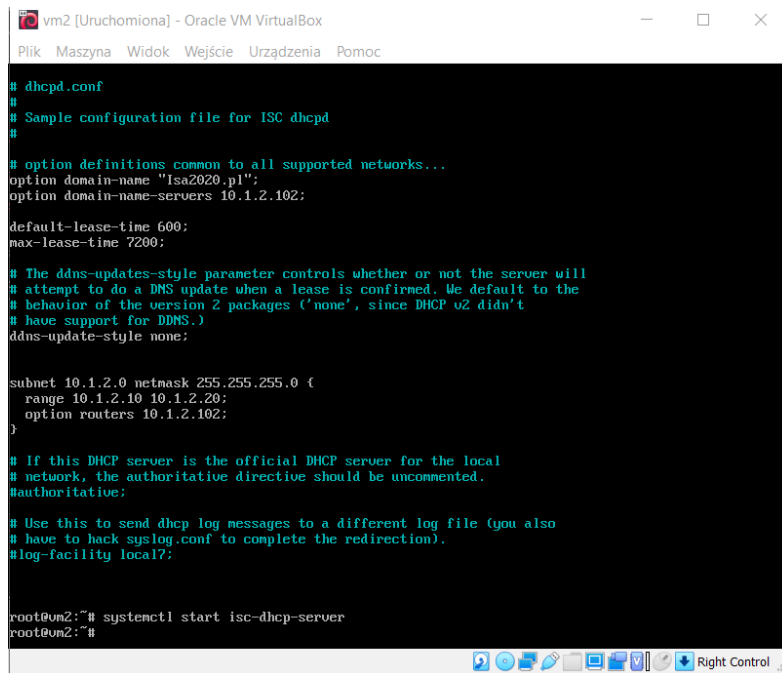
# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="eth0"
INTERFACESv6=""
```

b.



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

# dhcpd.conf
#
# Sample configuration file for ISC dhcpd
#

# option definitions common to all supported networks...
option domain-name "Isa2020.pl";
option domain-name-servers 10.1.2.102;

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

# The ddns-updates-style parameter controls whether or not the server will
# attempt to do a DNS update when a lease is confirmed. We default to the
# behavior of the version 2 packages ('none', since DHCP v2 didn't
# have support for DDNS.)
# have support for DDNS.)
ddns-update-style none;

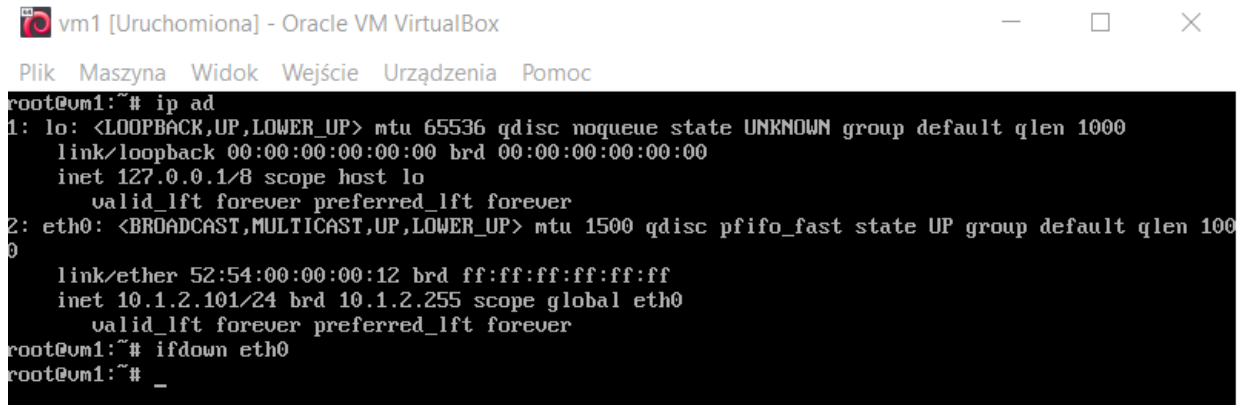
subnet 10.1.2.0 netmask 255.255.255.0 {
    range 10.1.2.10 10.1.2.20;
    option routers 10.1.2.102;
}

# 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;

root@vm2:~# systemctl start isc-dhcp-server
root@vm2:~#
```

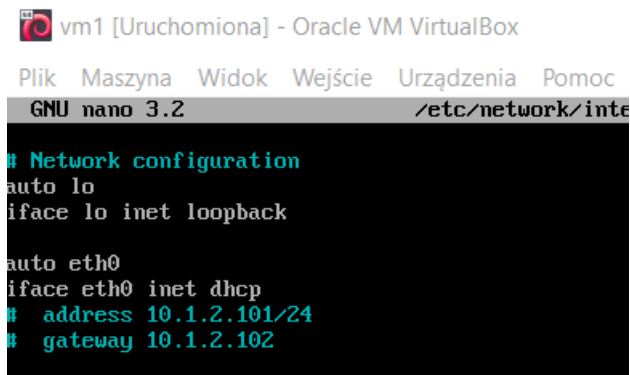
3. systemctl start isc-dhcp-server uruchomił się bez komunikatów;
4. .
5. .



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

root@vm1:~# ip ad
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:54:00:00:00:12 brd ff:ff:ff:ff:ff:ff
    inet 10.1.2.101/24 brd 10.1.2.255 scope global eth0
        valid_lft forever preferred_lft forever
root@vm1:~# ifdown eth0
root@vm1:~# _
```

6. .



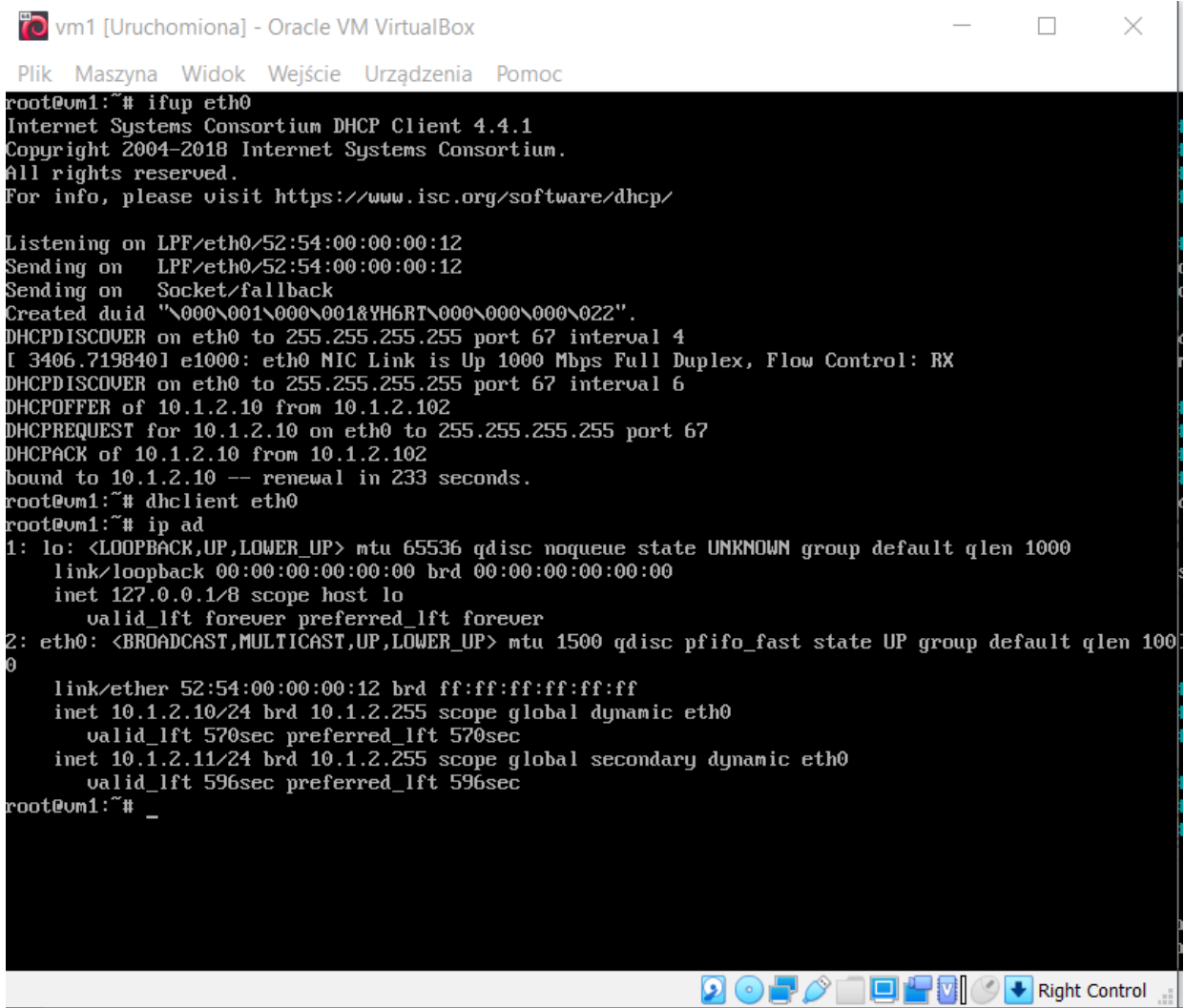
```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

GNU nano 3.2 /etc/network/interfaces

# Network configuration
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet dhcp
# address 10.1.2.101/24
# gateway 10.1.2.102
```

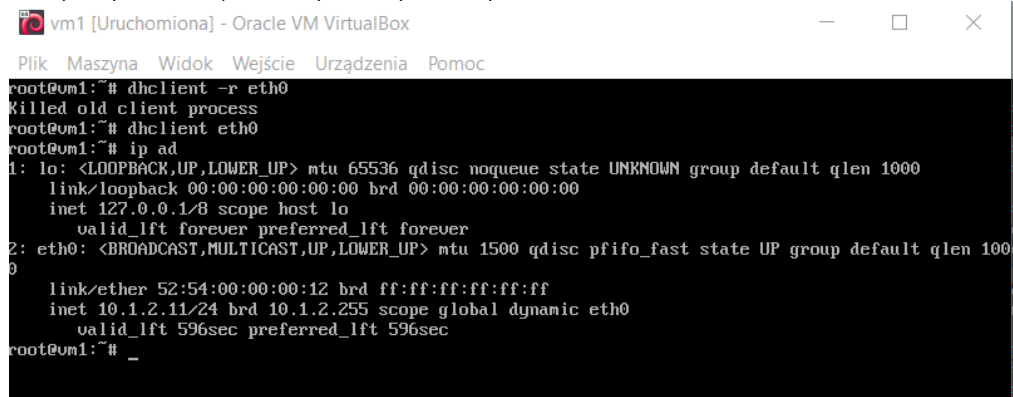
7. .
8. . uzyskałem dwa adresy, z końcówką 10 jak i 11



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
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root@vm1:~# ifup eth0
Internet Systems Consortium DHCP Client 4.4.1
Copyright 2004-2018 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eth0/52:54:00:00:00:12
Sending on LPF/eth0/52:54:00:00:00:12
Sending on Socket/fallback
Created duid "\000\001\000\001&YH6RT\000\000\000\022".
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 4
[ 3406.719840] e1000: eth0 NIC Link is Up 1000 Mbps Full Duplex, Flow Control: RX
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6
DHCPOFFER of 10.1.2.10 from 10.1.2.102
DHCPREQUEST for 10.1.2.10 on eth0 to 255.255.255.255 port 67
DHCPACK of 10.1.2.10 from 10.1.2.102
bound to 10.1.2.10 -- renewal in 233 seconds.
root@vm1:~# dhclient eth0
root@vm1:~# ip ad
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:54:00:00:00:12 brd ff:ff:ff:ff:ff:ff
    inet 10.1.2.10/24 brd 10.1.2.255 scope global dynamic eth0
        valid_lft 570sec preferred_lft 570sec
    inet 10.1.2.11/24 brd 10.1.2.255 scope global secondary dynamic eth0
        valid_lft 596sec preferred_lft 596sec
root@vm1:~# _
```

9. .
10. .
11. VM1 uzyskał jeden adres, 10.1.2.11 jest on dynamiczny



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm1:~# dhclient -r eth0
Killed old client process
root@vm1:~# dhclient eth0
root@vm1:~# ip ad
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:54:00:00:00:12 brd ff:ff:ff:ff:ff:ff
    inet 10.1.2.11/24 brd 10.1.2.255 scope global dynamic eth0
        valid_lft 596sec preferred_lft 596sec
root@vm1:~# _
```