

ΕΡΓΑΣΙΑ 3 ΔΙΚΤΥΩΝ ΥΠΟΛΟΓΙΣΤΩΝ

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Ερώτηση 1:

```
[admin@mikroTik] > /ip address add address=108.45.22.1/24 interface=ether2
[admin@mikroTik] > /ip address add address=108.45.23.1/24 interface=ether3
```

A.

```
[admin@mikroTik] > ip/address/print
Flags: D - DYNAMIC
Columns: ADDRESS, NETWORK, INTERFACE
#   ADDRESS          NETWORK        INTERFACE
0  192.168.85.130/24  192.168.85.0  ether1
1  108.45.22.1/24    108.45.22.0  ether2
2  108.45.23.1/24    108.45.23.0  ether3
```

B.

```
[admin@mikroTik] > ip/route/print
Flags: D - DYNAMIC; A - ACTIVE; c, d, y - COPY
Columns: DST-ADDRESS, GATEWAY, DISTANCE
      DST-ADDRESS      GATEWAY      DISTANCE
DAd 0.0.0.0/0        192.168.85.2      1
DAc 108.45.22.0/24  ether2          0
DAc 108.45.23.0/24  ether3          0
DAc 192.168.85.0/24 ether1          0
```

Γ.

```
[admin@mikroTik] > ip/dhcp-client/print
Columns: INTERFACE, USE-PEER-DNS, ADD-DEFAULT-ROUTE, STATUS, ADDRESS
# INTERFACE  USE-PEER-DNS  ADD-DEFAULT-ROUTE  STATUS  ADDRESS
0 ether1     yes         yes           bound   192.168.85.130/24
```

Δ.

```
[admin@mikrotik] > ip/dhcp-server/setup
Select interface to run DHCP server on

dhcp server interface: ether2
Select network for DHCP addresses

dhcp address space: 108.45.22.0/24
Select gateway for given network

gateway for dhcp network: 108.45.22.1
Select pool of ip addresses given out by DHCP server

addresses to give out: 108.45.22.2-108.45.22.254
Select DNS servers

dns servers: 192.168.85.2
Select lease time

lease time: 10m
```

```
[admin@mikrotik] > ip/dhcp-server/setup
Select interface to run DHCP server on

dhcp server interface: ether3
Select network for DHCP addresses

dhcp address space: 108.45.23.0/24
Select gateway for given network

gateway for dhcp network: 108.45.23.1
Select pool of ip addresses given out by DHCP server

addresses to give out: 108.45.23.2-108.45.23.254
Select DNS servers

dns servers: 192.168.85.2
Select lease time

lease time: 10m
```

E.

```
[admin@NikroTik] > ping 8.8.8.8
SEQ HOST                               SIZE TTL TIME      STATUS
 0 8.8.8.8                           56 128 38ms297us
 1 8.8.8.8                           56 128 38ms318us
 2 8.8.8.8                           56 128 36ms605us
 3 8.8.8.8                           56 128 36ms168us
 4 8.8.8.8                           56 128 36ms33us
 5 8.8.8.8                           56 128 36ms116us
 6 8.8.8.8                           56 128 41ms234us
 7 8.8.8.8                           56 128 36ms336us
 8 8.8.8.8                           56 128 38ms754us
 9 8.8.8.8                           56 128 41ms566us
10 8.8.8.8                           56 128 36ms883us
11 8.8.8.8                           56 128 36ms45us
12 8.8.8.8                           56 128 35ms815us
13 8.8.8.8                           56 128 39ms127us
14 8.8.8.8                           56 128 43ms433us
15 8.8.8.8                           56 128 35ms973us
16 8.8.8.8                           56 128 36ms794us
17 8.8.8.8                           56 128 45ms706us
18 8.8.8.8                           56 128 37ms451us
19 8.8.8.8                           56 128 36ms603us
sent=20 received=20 packet-loss=0% min-rtt=35ms815us avg-rtt=38ms162us max-rtt=45ms706us
```

ΣΤ.

Ερώτηση 2:

A.

```
PC1> show ip

NAME      : PC1[1]
IP/MASK   : 0.0.0.0/0
GATEWAY   : 0.0.0.0
DNS       :
MAC       : 00:50:79:66:68:00
LPORT     : 20006
RHOST:PORT : 127.0.0.1:20007
MTU       : 1500
```

B.

```

PC1> ping 108.45.22.1

84 bytes from 108.45.22.1 icmp_seq=1 ttl=64 time=2.122 ms
84 bytes from 108.45.22.1 icmp_seq=2 ttl=64 time=1.246 ms
84 bytes from 108.45.22.1 icmp_seq=3 ttl=64 time=1.647 ms
84 bytes from 108.45.22.1 icmp_seq=4 ttl=64 time=1.491 ms
84 bytes from 108.45.22.1 icmp_seq=5 ttl=64 time=1.104 ms

PC1> ping 108.45.23.1

84 bytes from 108.45.23.1 icmp_seq=1 ttl=64 time=1.364 ms
84 bytes from 108.45.23.1 icmp_seq=2 ttl=64 time=1.212 ms
84 bytes from 108.45.23.1 icmp_seq=3 ttl=64 time=1.059 ms
84 bytes from 108.45.23.1 icmp_seq=4 ttl=64 time=1.708 ms
84 bytes from 108.45.23.1 icmp_seq=5 ttl=64 time=1.273 ms

PC1> ping 192.168.85.130

84 bytes from 192.168.85.130 icmp_seq=1 ttl=64 time=1.434 ms
84 bytes from 192.168.85.130 icmp_seq=2 ttl=64 time=1.346 ms
84 bytes from 192.168.85.130 icmp_seq=3 ttl=64 time=1.153 ms
84 bytes from 192.168.85.130 icmp_seq=4 ttl=64 time=1.542 ms
84 bytes from 192.168.85.130 icmp_seq=5 ttl=64 time=1.110 ms

```

Γ.

```

PC1> ping 8.8.8.8

8.8.8.8 icmp_seq=1 timeout
8.8.8.8 icmp_seq=2 timeout
8.8.8.8 icmp_seq=3 timeout
8.8.8.8 icmp_seq=4 timeout
8.8.8.8 icmp_seq=5 timeout

```

Βλέπουμε πως δεν κάνει ping. Αυτό οφείλεται στο γεγονός ότι δεν έχουμε κάνει nat.

Και βλέπουμε πως τώρα γίνεται κανονικά το ping:

```
[admin@mikrotik] > ip firewall nat add chain=srcnat action=masquerade out-interface=ether1
```

Ερώτηση 3:

A.

```
debian@debian:~$ ip a
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
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 0c:77:4b:bc:00:00 brd ff:ff:ff:ff:ff:ff
    altname enp0s4
    inet 108.45.23.254/24 brd 108.45.23.255 scope global dynamic ens4
        valid_lft 420sec preferred_lft 420sec
    inet6 fe80::e77:4bff:febc:0/64 scope link
        valid_lft forever preferred_lft forever
```

B.

```
 debian@debian:~$ 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=4 ttl=127 time=1598 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=127 time=1642 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=127 time=1631 ms
64 bytes from 8.8.8.8: icmp_seq=12 ttl=127 time=1647 ms
64 bytes from 8.8.8.8: icmp_seq=16 ttl=127 time=1547 ms
64 bytes from 8.8.8.8: icmp_seq=19 ttl=127 time=1748 ms
64 bytes from 8.8.8.8: icmp_seq=23 ttl=127 time=4632 ms
64 bytes from 8.8.8.8: icmp_seq=30 ttl=127 time=43.5 ms
64 bytes from 8.8.8.8: icmp_seq=31 ttl=127 time=36.9 ms
64 bytes from 8.8.8.8: icmp_seq=32 ttl=127 time=37.2 ms
64 bytes from 8.8.8.8: icmp_seq=33 ttl=127 time=37.3 ms
64 bytes from 8.8.8.8: icmp_seq=34 ttl=127 time=37.3 ms
64 bytes from 8.8.8.8: icmp_seq=35 ttl=127 time=37.1 ms
64 bytes from 8.8.8.8: icmp_seq=36 ttl=127 time=39.2 ms
64 bytes from 8.8.8.8: icmp_seq=37 ttl=127 time=37.5 ms
64 bytes from 8.8.8.8: icmp_seq=38 ttl=127 time=40.6 ms
64 bytes from 8.8.8.8: icmp_seq=39 ttl=127 time=42.2 ms
64 bytes from 8.8.8.8: icmp_seq=40 ttl=127 time=41.6 ms
64 bytes from 8.8.8.8: icmp_seq=41 ttl=127 time=39.6 ms
64 bytes from 8.8.8.8: icmp_seq=42 ttl=127 time=38.0 ms
64 bytes from 8.8.8.8: icmp_seq=43 ttl=127 time=41.9 ms
64 bytes from 8.8.8.8: icmp_seq=44 ttl=127 time=38.6 ms
^C
--- 8.8.8.8 ping statistics ---
44 packets transmitted, 22 received, 50% packet loss, time 43522ms
rtt min/avg/max/mdev = 36.882/683.351/4632.221/1113.530 ms, pipe 5
```

F.

```
debian@debian:~$ sudo apt-get update
Get:1 http://security.debian.org/debian-security bullseye-security InRelease [48.4 kB]
Get:2 http://deb.debian.org/debian bullseye InRelease [116 kB]
Get:3 http://security.debian.org/debian-security bullseye-security/main Sources [188 kB]
Get:4 http://deb.debian.org/debian bullseye-updates InRelease [44.1 kB]
Get:5 http://deb.debian.org/debian bullseye-backports InRelease [49.0 kB]
Get:6 http://deb.debian.org/debian bullseye/main Sources [8634 kB]
Get:7 http://security.debian.org/debian-security bullseye-security/main amd64 Packages [236 kB]
Get:8 http://security.debian.org/debian-security bullseye-security/main Translation-en [155 kB]
Get:9 http://deb.debian.org/debian bullseye/main amd64 Packages [8183 kB]
Get:10 http://deb.debian.org/debian bullseye/main Translation-en [6240 kB]
Get:11 http://deb.debian.org/debian bullseye-updates/main Sources [4812 B]
Get:12 http://deb.debian.org/debian bullseye-updates/main amd64 Packages [14.6 kB]
Get:13 http://deb.debian.org/debian bullseye-updates/main Translation-en [7929 B]
Get:14 http://deb.debian.org/debian bullseye-backports/main Sources [420 kB]
Get:15 http://deb.debian.org/debian bullseye-backports/main amd64 Packages [416 kB]
Get:16 http://deb.debian.org/debian bullseye-backports/main Translation-en [348 kB]
Fetched 25.1 MB in 17min 30s (23.9 kB/s)
Reading package lists... Done
debian@debian:~$ sudo apt-get install telnet
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  telnet
0 upgraded, 1 newly installed, 0 to remove and 11 not upgraded.
Need to get 71.1 kB of archives.
After this operation, 167 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bullseye/main amd64 telnet amd64 0.17-42 [71.1 kB]
Fetched 71.1 kB in 2s (43.4 kB/s)
Selecting previously unselected package telnet.
(Reading database ... 19889 files and directories currently installed.)
Preparing to unpack .../telnet_0.17-42_amd64.deb ...
Unpacking telnet (0.17-42) ...
Setting up telnet (0.17-42) ...
update-alternatives: using /usr/bin/telnet.netkit to provide /usr/bin/telnet (telnet) in auto mode
Processing triggers for man-db (2.9.4-2) ...
```

△.

```
debian@debian:~$ telnet 192.168.1.72
Trying 192.168.1.72...
Connected to 192.168.1.72.
Escape character is '^]'.
Login: admin
Password:

          MMM      MMM      KKK      TTTTTTTTTTTT      KKK
          MMMMM    MMMMM    KKK      TTTTTTTTTTTT      KKK
          MMM  MMMM  MMM  III  KKK  KKK  RRRRRR  000000  TTT  III  KKK  KKK
          MMM  MM  MMM  III  KKKKKK  RRR  RRR  000  000  TTT  III  KKKKKK
          MMM      MMM  III  KKK  KKK  RRRRRR  000  000  TTT  III  KKK  KKK
          MMM      MMM  III  KKK  KKK  RRR  RRR  000000  TTT  III  KKK  KKK

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Press F1 for help

[admin@MikroTik] > [green]
```

ΤΕΛΟΣ ΑΝΑΦΟΡΑΣ!!