

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 D 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@Mikrotik] > 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
```

Γ.

```
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 [168 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) ...
```

Δ.

```
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      TTTTTTTTTT      KKK
      MMMM     MMMM     KKK      TTTTTTTTTT      KKK
      MMM MMMM MMM III KKK KKK RRRRRR 000000      TTT   III KKK KKK
      MMM MM  MMM III KKKKK  RRR RRR 000 000      TTT   III KKKKK
      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] > █
```

ΤΕΛΟΣ ΑΝΑΦΟΡΑΣ!!