ΑΓΓΕΛΟΣ ΝΙΚΟΛΑΟΣ ΠΟΤΑΜΙΑΝΟΣ
ΑΜ 1084537
ΕΡΓΑΣΤΗΡΙΟ ΔΙΚΤΥΑ ΥΠΟΛΟΓΙΣΤΩΝ
ΑΚ ΕΤΟΣ 2022-2023
3ο ΕΞΑΜΗΝΟ ΣΠΟΥΔΩΝ

Ο R1 έχει πρόσβαση στο εξωτερικό δίκτυο:


```
R1#ping 8.8.8.8
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 8.8.8.8, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 44/58/100 ms
R1#traceroute 8.8.8.8
Type escape sequence to abort.
Tracing the route to 8.8.8.8
VRF info: (vrf in name/id, vrf out name/id)
  1 192.168.5.2 12 msec 12 msec 12 msec
  2  *  *  *
  3  *  *  *
  4  *  *  *
  5  *  *  *
  6  *  *  *
  7  *  *  *
  8  *  *  *
  9  *  *  *
 10  *  *  *
 11  *  *  *
 12  *  *  *
 13  *  *  *
 14  *  *  *
 15  *  *  *
 16  *  *  *
 17  *  *  *
 18  *  *  *
 19  *  *  *
 20  *  *  *
 21  *  *  *
 22  *  *  *
 23  *  *  *
 24  *  *  *
 25  *  *  *
 26  *  *  *
 27  *  *  *
 28  *  *  *
 29  *  *  *
 30  *  *  *
R1#
```

```
R1#show ip dhcp binding
Bindings from all pools not associated with VRF:
IP address          Client-ID/              Lease expiration          Type
                    Hardware address/
                    User name
108.45.37.2         0100.5079.6668.00       May 01 2023 02:44 PM      Automatic
108.45.37.3         0100.5079.6668.02       May 01 2023 02:44 PM      Automatic
108.45.37.131       0100.5079.6668.01       May 01 2023 02:44 PM      Automatic
R1#show ip dhcp pool

Pool 1084537-1DHCP :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 126
 Leased addresses               : 2
 Pending event                  : none
 1 subnet is currently in the pool :
 Current index       IP address range                     Leased addresses
 108.45.37.4         108.45.37.1      - 108.45.37.126       2

Pool 1084537-2DHCP :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 126
 Leased addresses               : 1
 Pending event                  : none
 1 subnet is currently in the pool :
 Current index       IP address range                     Leased addresses
 108.45.37.132       108.45.37.129    - 108.45.37.254       1
R1#
```

```
vIOS-L2-01>show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
   1    0cba.e561.0000    DYNAMIC     Gi0/3
   1    ca01.047c.001c    DYNAMIC     Gi0/0
Total Mac Addresses for this criterion: 2
vIOS-L2-01>
```

```
vIOS-L2-01> show mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
   1    0c9d.8e0f.0003    DYNAMIC     Gi0/0
Total Mac Addresses for this criterion: 1
vIOS-L2-01>
```

Φαίνεται πως PC1 και PC3 είναι μαζί και PC4 και DEBIAN μαζί στο ίδιο υποδίκτυο:

```
         dns ip         Set DNS server ip, delete if ip is '0'
         domain NAME    Set local domain name to NAME

PC1> if config
Bad command: "if config". Use ? for help.

PC1> show ip

NAME        : PC1[1]
IP/MASK     : 108.45.37.2/25
GATEWAY     : 108.45.37.1
DNS         : 8.8.8.8
DHCP SERVER : 108.45.37.1
DHCP LEASE  : 85404, 86400/43200/75600
MAC         : 00:50:79:66:68:00
LPORT       : 2010
RHOST:PORT  : 127.0.0.1:2011
MTU:        : 1500

PC1>
```

```
Executing the startup file


PC2> dhcp
DDORA IP 108.45.37.131/25 GW 108.45.37.129

PC2> show ip

NAME        : PC2[1]
IP/MASK     : 108.45.37.131/25
GATEWAY     : 108.45.37.129
DNS         : 8.8.8.8
DHCP SERVER : 108.45.37.129
DHCP LEASE  : 85403, 86400/43200/75600
MAC         : 00:50:79:66:68:01
LPORT       : 2012
RHOST:PORT  : 127.0.0.1:2013
MTU:        : 1500

PC2>
```

```
Executing the startup file


PC3> dhcp
DDORA IP 108.45.37.3/25 GW 108.45.37.1

PC3> show ip

NAME        : PC3[1]
IP/MASK     : 108.45.37.3/25
GATEWAY     : 108.45.37.1
DNS         : 8.8.8.8
DHCP SERVER : 108.45.37.1
DHCP LEASE  : 85402, 86400/43200/75600
MAC         : 00:50:79:66:68:02
LPORT       : 2014
RHOST:PORT  : 127.0.0.1:2015
MTU:        : 1500

PC3>
```

πρόσβαση τερματικών στο εξωτερικό δίκτυο:

```
MAC        : 00:50:79:66:68:01
LPORT      : 2012
RHOST:PORT : 127.0.0.1:2013
MTU:       : 1500

PC2> ping 8.8.8.8
84 bytes from 8.8.8.8 icmp_seq=1 ttl=127 time=55.136 ms
84 bytes from 8.8.8.8 icmp_seq=2 ttl=127 time=54.938 ms
84 bytes from 8.8.8.8 icmp_seq=3 ttl=127 time=47.870 ms
84 bytes from 8.8.8.8 icmp_seq=4 ttl=127 time=57.791 ms
84 bytes from 8.8.8.8 icmp_seq=5 ttl=127 time=47.498 ms

PC2> ping google.com
google.com resolved to 142.250.181.238
84 bytes from 142.250.181.238 icmp_seq=1 ttl=127 time=49.532 ms
84 bytes from 142.250.181.238 icmp_seq=2 ttl=127 time=59.882 ms
84 bytes from 142.250.181.238 icmp_seq=3 ttl=127 time=55.748 ms
84 bytes from 142.250.181.238 icmp_seq=4 ttl=127 time=63.097 ms
84 bytes from 142.250.181.238 icmp_seq=5 ttl=127 time=51.327 ms

PC2>
```

```
MAC        : 00:50:79:66:68:02
LPORT      : 2014
RHOST:PORT : 127.0.0.1:2015
MTU:       : 1500

PC3> ping 8.8.8.8
84 bytes from 8.8.8.8 icmp_seq=1 ttl=127 time=47.275 ms
84 bytes from 8.8.8.8 icmp_seq=2 ttl=127 time=59.613 ms
84 bytes from 8.8.8.8 icmp_seq=3 ttl=127 time=53.707 ms
84 bytes from 8.8.8.8 icmp_seq=4 ttl=127 time=49.741 ms
84 bytes from 8.8.8.8 icmp_seq=5 ttl=127 time=59.743 ms

PC3> ping google.com
google.com resolved to 142.250.181.238
84 bytes from 142.250.181.238 icmp_seq=1 ttl=127 time=67.424 ms
84 bytes from 142.250.181.238 icmp_seq=2 ttl=127 time=59.796 ms
84 bytes from 142.250.181.238 icmp_seq=3 ttl=127 time=56.843 ms
84 bytes from 142.250.181.238 icmp_seq=4 ttl=127 time=54.531 ms
84 bytes from 142.250.181.238 icmp_seq=5 ttl=127 time=63.410 ms

PC3>
```

```
        valid_lft forever preferred_lft forever
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=1 ttl=127 time=58.6 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=127 time=78.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=127 time=68.8 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=127 time=63.1 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 58.573/67.293/78.720/7.524 ms
debian@debian:~$ ping google.com
PING google.com (142.250.181.238) 56(84) bytes of data.
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=1 ttl=127 time=63.5 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=2 ttl=127 time=66.2 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=3 ttl=127 time=58.1 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=4 ttl=127 time=65.3 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=5 ttl=127 time=68.9 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=6 ttl=127 time=60.0 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=7 ttl=127 time=54.5 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=8 ttl=127 time=59.7 ms
64 bytes from fra16s56-in-f14.1e100.net (142.250.181.238): icmp_seq=9 ttl=127 time=56.9 ms
^C
--- google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8013ms
rtt min/avg/max/mdev = 54.517/61.457/68.868/4.501 ms
debian@debian:~$
```

```
PC1>  trace 8.8.8.8
trace to 8.8.8.8, 8 hops max, press Ctrl+C to stop
 1   108.45.37.1    8.799 ms   13.097 ms   16.945 ms
 2   192.168.5.2    21.469 ms   21.437 ms   21.469 ms
 3    *   *   *
 4    *   *   *
 5    *   *   *
 6    *   *   *
 7    *   *   *
 8    *   *   *

PC1>
```

```
PC2>  trace 8.8.8.8
trace to 8.8.8.8, 8 hops max, press Ctrl+C to stop
 1   108.45.37.129    15.743 ms   12.567 ms   7.320 ms
 2   192.168.5.2    21.177 ms   20.300 ms   20.465 ms
 3    *   *   *
 4    *   *   *
 5    *   *   *
 6    *   *   *
 7    *   *   *
 8    *   *   *

PC2>
```

```
PC3>  trace 8.8.8.8
trace to 8.8.8.8, 8 hops max, press Ctrl+C to stop
 1   108.45.37.1   15.842 ms  16.699 ms  18.738 ms
 2   192.168.5.2   25.701 ms  16.828 ms  20.848 ms
 3     *  *  *
 4     *  *  *
 5     *  *  *
 6     *  *  *
 7     *  *  *
 8     *  *  *

PC3>
```

```
debian@debian:~$ traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1  static-108-45-37-129.washdc.fios.verizon.net (108.45.37.129)  19.458 ms  19.171 ms  19.290 ms
 2  192.168.5.2 (192.168.5.2)  40.450 ms  40.571 ms  40.554 ms
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
debian@debian:~$
```

Ίδιο vlan: 1 βήμα

Διαφορετικό vlan: 2 βήματα

```
debian@debian:~$ traceroute 108.45.37.2
traceroute to 108.45.37.2 (108.45.37.2), 30 hops max, 60 byte packets
 1  static-108-45-37-129.washdc.fios.verizon.net (108.45.37.129)  26.260 ms  26.008 ms  25.871 ms
 2  static-108-45-37-2.washdc.fios.verizon.net (108.45.37.2)  3036.554 ms * *
debian@debian:~$ traceroute 108.45.37.3
traceroute to 108.45.37.3 (108.45.37.3), 30 hops max, 60 byte packets
 1  static-108-45-37-129.washdc.fios.verizon.net (108.45.37.129)  27.295 ms  27.214 ms  27.201 ms
 2  static-108-45-37-3.washdc.fios.verizon.net (108.45.37.3)  3035.068 ms * *
debian@debian:~$ traceroute 108.45.37.131
traceroute to 108.45.37.131 (108.45.37.131), 30 hops max, 60 byte packets
 1  static-108-45-37-131.washdc.fios.verizon.net (108.45.37.131)  30.479 ms  30.419 ms  30.408 ms
debian@debian:~$
```

```
debian@debian:~$ traceroute 108.45.37.2
traceroute to 108.45.37.2 (108.45.37.2), 30 hops max, 60 byte packets
 1  static-108-45-37-129.washdc.fios.verizon.net (108.45.37.129)  26.260 ms  26.008 ms  25.871 ms
 2  static-108-45-37-2.washdc.fios.verizon.net (108.45.37.2)  3036.554 ms * *
debian@debian:~$ traceroute 108.45.37.3
traceroute to 108.45.37.3 (108.45.37.3), 30 hops max, 60 byte packets
 1  static-108-45-37-129.washdc.fios.verizon.net (108.45.37.129)  27.295 ms  27.214 ms  27.201 ms
 2  static-108-45-37-3.washdc.fios.verizon.net (108.45.37.3)  3035.068 ms * *
debian@debian:~$ traceroute 108.45.37.131
traceroute to 108.45.37.131 (108.45.37.131), 30 hops max, 60 byte packets
 1  static-108-45-37-131.washdc.fios.verizon.net (108.45.37.131)  30.479 ms  30.419 ms  30.408 ms
debian@debian:~$
```

| : | ● Debian11 × | ● IOSv-L2 | ● IOSv-L2 | ● PC1 | ● PC2 | ● PC3 | ● R1 | ⊕ | — | ▢ | ✕ |

```
6th_Ergasia.sh.x    100%[===================>]  38.67K  --.-KB/s    in 0.006s

2023-05-01 14:47:53 (6.45 MB/s) - '6th_Ergasia.sh.x' saved [39600/39600]

debian@debian:~$ chmod ogu+x 6th_Ergasia.sh.x
debian@debian:~$ sudo ./6th_Ergasia.sh.x
Give your Arithmo Mitroou/Δώστε τον αριθμο μητρώου (7ψήφιο) σας: 1084537
your ip address: 108.45.37.130 and your gateway: 108.45.37.129
Checking Gateway:  GW_CORRECT
Getting IPs from Router:   Connection closed by foreign host.
192.168.5.142 108.45.37.1
108.45.37.129
Checking Gateway of VLAN 10:  GW_VLAN_10: CORRECT
Checking Gateway of VLAN 5:  sh: 60: [: 192.168.5.142: unexpected operator
GW_VLAN_5: FAILED
Ping to VLAN 5 Gateway:  ping to VLAN_5_Gateway: SUCCESS
Ping to VLAN 10 Gateway:  ping to VLAN_10_Gateway: FAILED
Getting arp table:   Connection closed by foreign host.
Debian's mac adress exists in ARP table: SUCCESS
Getting dhcp pools from Router:   Connection closed by foreign host.
Subnet_of_VLAN_5: CORRECT
Subnet_of_VLAN_10: CORRECT
Getting dhcp leases from Router:  Connection closed by foreign host.
108.45.37.2
108.45.37.3
108.45.37.130
108.45.37.131
Start traceroute to 1st PC of VLAN 5:  108.45.37.2 belong to VLAN_5: CORRECT
Start traceroute to 2nd PC of VLAN 5:  108.45.37.3 belong to VLAN_5: CORRECT
Start traceroute to 1st PC of VLAN 10:  108.45.37.130 belong to VLAN_10: CORRECT
Start traceroute to 2nd PC of VLAN 10:  108.45.37.131 belong to VLAN_10: CORRECT
Begin ping to 8.8.8.8:  ping to 8.8.8.8_CORRECT
Begin ping to google.com:  ping to google.com_CORRECT
Start traceroute to 8.8.8.8 with ICMP:  traceroute_CORRECT: you reach 8.8.8.8 in 12 hops
Submit result: y/n ?y
entered yes. uploading results....good bye
debian@debian:~$
```