

<b>Όνοματεπώνυμο: Άγγελος Μητροκώτσας</b>	<b>Ομάδα: 6</b>
<b>Όνομα PC/ΛΣ: DESKTOP-91G20CF/ Windows 10 Pro 20H2</b>	<b>Ημερομηνία: 20/ 12/ 2021</b>
<b>Διεύθυνση IP:</b> 192.168.1.4	<b>Διεύθυνση MAC:</b> F8-63-3F-59-24-C8

## Εργαστηριακή Άσκηση 9

### SMTP, DHCP

Απαντήστε στα ερωτήματα στον χώρο που σας δίνεται παρακάτω και στην πίσω σελίδα εάν δεν επαρκεί. Το φυλλάδιο αυτό θα παραδοθεί στον επιβλέποντα.

#### 1 (assigned IP: 147.102.131.189)

1.1 Είναι ότι θέλω να μιλήσω με χρήση της εφαρμογής telnet με τον server: smtp.ntua.gr στην θύρα 25.

```
Administrator: Windows PowerShell
220 smtp3.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 12:59:02 +0200 (EET)
HELP
214-2.0.0 This is sendmail version 8.15.2
214-2.0.0 Topics:
214-2.0.0   HELO   EHLO   MAIL   RCPT   DATA
214-2.0.0   RSET   NOOP   QUIT   HELP   VRFY
214-2.0.0   EXPN   VERB   ETRN   DSN   AUTH
214-2.0.0   STARTTLS
214-2.0.0 For more info use "HELP <topic>".
214-2.0.0 To report bugs in the implementation see
214-2.0.0   http://www.sendmail.org/email-addresses.html
214-2.0.0 For local information send email to Postmaster at your site.
214 2.0.0 End of HELP info
HELO cn.ntua.gr
250 smtp3.ntua.gr Hello vpn-131-189.vpn.ntua.gr [147.102.131.189], pleased to meet you
EHLO cn.ntua.gr
250-smtp3.ntua.gr Hello vpn-131-189.vpn.ntua.gr [147.102.131.189], pleased to meet you
250-ENHANCEDSTATUSCODES
250-PIPELINING
250-8BITMIME
250-SIZE
250-ETRN
250-STARTTLS
250-DELIVERBY
250-HELP
HELP EHLO
214-2.0.0 EHLO <hostname>
214-2.0.0   Introduce yourself, and request extended SMTP mode.
214-2.0.0 Possible replies include:
214-2.0.0   SEND      Send as mail           [RFC821]
214-2.0.0   SOML      Send as mail or terminal [RFC821]
214-2.0.0   SAML      Send as mail and terminal [RFC821]
214-2.0.0   EXPN      Expand the mailing list    [RFC821]
214-2.0.0   HELP      Supply helpful information [RFC821]
214-2.0.0   TURN      Turn the operation around [RFC821]
214-2.0.0   8BITMIME Use 8-bit data        [RFC1652]
214-2.0.0   SIZE      Message size declaration [RFC1870]
214-2.0.0   VERB      Verbose                [Allman]
214-2.0.0   CHUNKING Chunking                [RFC1830]
214-2.0.0   BINARYMIME Binary MIME            [RFC1830]
214-2.0.0   PIPELINING Command Pipelining     [RFC1854]
214-2.0.0   DSN       Delivery Status Notification [RFC1891]
214-2.0.0   ETRN      Remote Message Queue Starting [RFC1985]
214-2.0.0   STARTTLS Secure SMTP             [RFC2487]

214-2.0.0   STARTTLS Secure SMTP             [RFC2487]
214-2.0.0   AUTH      Authentication         [RFC2554]
214-2.0.0   ENHANCEDSTATUSCODES Enhanced status codes [RFC2034]
214-2.0.0   DELIVERBY Deliver By            [RFC2852]
214 2.0.0 End of HELP info
QUIT
221 2.0.0 smtp3.ntua.gr closing connection

Δεν υπάρχει σύνδεση με τον κεντρικό υπολογιστή.
PS C:\Windows\system32>
```

1.2 Ο κωδικός απόκρισης είναι 220 (από το αναγνωριστικό κείμενο που αποστέλλει ο εξυπηρετητής STMP: 220 smtp3.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 12:59:02 +0200 (EET) ) που σημαίνει ότι η διεύθυνση smtp3.ntua.gr είναι έτοιμη να επικοινωνήσει

Time	Source	Protocol	Length	Destination	Info
9.077916	147.102.131.189	SMTP	56	147.102.222.101	C: EHLO cn.ntua.gr
7.752180	147.102.131.189	SMTP	56	147.102.222.101	C: HELO cn.ntua.gr
3.102594	147.102.131.189	SMTP	56	147.102.222.101	C: HELP
7.621468	147.102.131.189	SMTP	56	147.102.222.101	C: HELP EHLO
7.218199	147.102.131.189	SMTP	56	147.102.222.101	C: QUIT
0.014427	147.102.222.101	SMTP	1110	147.102.131.189	S: 214-2.0.0 EHLO <hostname>   2.0.0 \tIntroduce yourself, an...
0.067122	147.102.222.101	SMTP	501	147.102.131.189	S: 214-2.0.0 This is sendmail version 8.15.2   2.0.0 Topics: ...
0.000000	147.102.222.101	SMTP	141	147.102.131.189	S: 220 smtp3.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 De...
0.014124	147.102.222.101	SMTP	98	147.102.131.189	S: 221 2.0.0 smtp3.ntua.gr closing connection

### 1.3 smtp3.ntua.gr

1.4 Το αναγνωριστικό κείμενο που αποστέλλει ο εξυπηρετητής STMP: 220 smtp3.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 12:59:02 +0200 (EET)

1.5 Είναι 214.

1.6 Το πληθος τους είναι 16 και τρεις από αυτές είναι: HELO, EHLO, MAIL

1.7 Στην τελευταία γραμμή ο εξυπηρετητής στέλνει το μήνυμα 214 2.0.0 End of HELP info

1.8 Είναι 250

1.9 Ναι εμφανίζεται. Περιέχει το μήνυμα: 250 smtp3.ntua.gr Hello vpn-131-189.vpn.ntua.gr [147.102.131.189], pleased to meet you

1.10 Περιλαμβάνει 9 γραμμές

1.11 Περιέχει τις επιπλέον υπηρεσίες που παρέχει το ESMPT έναντι του SMTP στον συγκεκριμένο server, δηλαδή βοηθητικές εντολές για εξοικειωση του χρήστη (η EHLO είναι η extended εκδοχή της HELO)

1.12 Έγινε εμφανές στο πρώτο μύνημα που λάβαμε από αυτόν το οποίο δήλωνε ότι υποστηρίζει ESMTP 220 smtp3.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 14:08:56 +0200 (EET)

1.13 Mon, 20 Dec 2021 14:49:19 +0200 (EET)

```

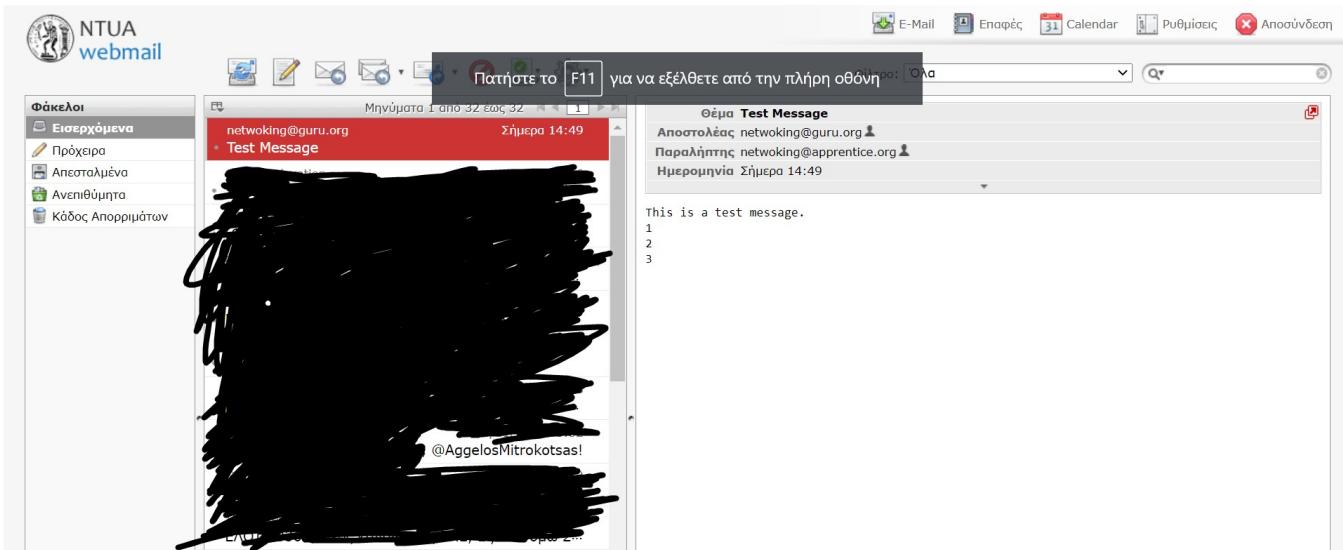
Administrator: Windows PowerShell
220 achilles.noc.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 14:49:19 +0200 (EET)
EHLO example.com
250 achilles.noc.ntua.gr Hello vpn-131-189.vpn.ntua.gr [147.102.131.189], pleased to meet you
MAIL FROM:<a_guru@f.net>
250 2.1.0 <a_guru@f.net>... Sender ok
RCPT TO:<e118197@mail.ntua.gr>
250 2.1.5 <e118197@mail.ntua.gr>... Recipient ok
DATA
354 Enter mail, end with "." on a line by itself
From: networking@guru.org
To: networking@apprentice.org
Subject: Test Message

This is a test message.
.
.
.
250 2.0.0 1BKCNJaj035595 Message accepted for delivery
QUIT
221 2.0.0 achilles.noc.ntua.gr closing connection

PS C:\Windows\system32>

```

Δεν υπάρχει σύνδεση με τον κεντρικό υπολογιστή.



1.14 354(ο κωδικός απόκρισης) Enter mail, end with "." on a line by itself (η απόκριση)

1.15 Είναι για να τερματιστεί η εντολή DATA και να λάβει τα δεδομένα ο εξυπηρετητής

1.16 250(ο κωδικός απόκρισης) 2.0.0 1BKCnJaj035595 Message accepted for delivery (η απόκριση)

1.17 Αυτός του κειμένου της επικεφαλίδας

1.18 Αυτός του κειμένου της επικεφαλίδας

1.19 Στην επικεφαλίδα Return Path (Return-Path: [a\\_guru@of.net](mailto:a_guru@of.net))

```

Return-Path: <a_guru@of.net>
Received: from lmtpproxyd (f0.mail.ntua.gr [147.102.222.195])
        by m3.mail.ntua.gr (Cyrus v2.3.16) with LMTPA;
        Mon, 20 Dec 2021 14:51:25 +0200
X-Sieve: CMU Sieve 2.3
Received: from f0.mail.ntua.gr ([unix socket])
        by f0.mail.ntua.gr (Cyrus v2.3.16) with LMTPA;
        Mon, 20 Dec 2021 14:51:24 +0200
Received: from achilles.noc.ntua.gr (achilles.noc.ntua.gr [147.102.222.210])
        by f0.mail.ntua.gr (8.15.2/8.15.2) with ESMTP id 1BKCrOkw076930
        for <el18197@mail.ntua.gr>; Mon, 20 Dec 2021 14:51:24 +0200 (EET)
        (envelope-from <a_guru@of.net>)
Received: from example.com (vpn-131-189.vpn.ntua.gr [147.102.131.189])
        by achilles.noc.ntua.gr (8.15.2/8.15.2) with SMTP id 1BKCnJaj035595
        for <el18197@mail.ntua.gr>; Mon, 20 Dec 2021 14:50:09 +0200 (EET)
        (envelope-from <a_guru@of.net>)
Date: Mon, 20 Dec 2021 14:49:19 +0200 (EET)
Message-Id: <202112201250.1BKCnJaj035595@achilles.noc.ntua.gr>
X-Authentication-Warning: achilles.noc.ntua.gr: Host vpn-131-189.vpn.ntua.gr [147.102.131.189] claimed to be example.com
From: networking@guru.org
To: networking@apprentice.org
Subject: Test Message
X-Greylist: Sender IP whitelisted, not delayed by milter-greylist-4.6.2 (achilles.noc.ntua.gr [147.102.222.210]); Mon, 20 Dec 2021 14:51:23 +0200 (EET)
X-Virus-Scanned: clamav-milter 0.101.4 at dkim.noc.ntua.gr
X-Virus-Status: Clean
X-Spam-Status: No, score=2.1 required=5.0 tests=ALL_TRUSTED,BAYES_40,
    HEADER_FROM_DIFFERENT_DOMAINS,KAM_DMARC_STATUS,
    KAM_LAZY_DOMAIN_SECURITY,MISSING_DATE,MISSING_MID,SPF_HELO_FAIL,
    SPF_NONE autolearn=no autolearn_force=no version=3.4.2
X-Spam-Level: **
X-Spam-Checker-Version: SpamAssassin 3.4.2 (2018-09-13) on sa0.noc.ntua.gr

This is a test message.
1
2
3

```

1.20 Σε κάποιες από τις επικεφαλίδες Received (στις 2 τελευταίες από τις 4 που υπάρχουν συνολικά)

1.21 Στην Message-Id

1.22 Στις Received (την τελευταία από τις 4) και X-Authentication-Warning

1.23 Είναι m3.mail.ntua.gr ← f0.mail.ntua.gr ← f0.mail.ntua.gr ← achilles.noc.ntua.gr ← example.com

1.24 Χρησιμοποιήθηκαν τα πρωτόκολλα: LMTPA, LMTPA, ESMTP, SMTP (αντιστοιχούν ακριβώς ένα προς ένα με τα ονόματα των MTA με τη σειρά ακριβώς που τα έβαλα πάνω)

1.25 Είναι Date: Mon, 20 Dec 2021 14:49:19 +0200 (EET) και προέκυψε από τον εξυπηρετητή που στείλαμε το mail.

### 1.26 ip host relay.ntua.gr

```
Επιλογή Administrator: Windows PowerShell
220 achilles.noc.ntua.gr ESMTP Sendmail 8.15.2/8.15.2; Mon, 20 Dec 2021 15:47:45 +0200 (EET)
QUIT
221 2.0.0 achilles.noc.ntua.gr closing connection

Δεν υπάρχει σύνδεση με τον κεντρικό υπολογιστή.
PS C:\Windows\system32>
```

### 1.27 smtp

### 1.28 Πρωτόκολλο SMTP

### 1.29 Source Port: 25 Destination Port: 55647

No.	Time	Source	Protocol	Length	Destination	Info
1	0.000000	147.102.131.189	TCP	66	147.102.222.210	55647 → 25 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=25
2	0.011579	147.102.222.210	TCP	66	147.102.131.189	25 → 55647 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS
3	0.000106	147.102.131.189	TCP	54	147.102.222.210	55647 → 25 [ACK] Seq=1 Ack=1 Win=131328 Len=0
4	0.317884	147.102.222.210	SMTP	148	147.102.131.189	S: 220 achilles.noc.ntua.gr ESMTP Sendmail 8.15.2/8.1
5	0.040096	147.102.131.189	TCP	54	147.102.222.210	55647 → 25 [ACK] Seq=1 Ack=95 Win=131328 Len=0
6	2.229002	147.102.131.189	TCP	55	147.102.222.210	55647 → 25 [PSH, ACK] Seq=1 Ack=95 Win=131328 Len=1 [
7	0.112294	147.102.222.210	TCP	54	147.102.131.189	25 → 55647 [ACK] Seq=95 Ack=2 Win=66368 Len=0
8	0.251912	147.102.131.189	SMTP	55	147.102.222.210	C: QU
9	0.113988	147.102.222.210	TCP	54	147.102.131.189	25 → 55647 [ACK] Seq=95 Ack=3 Win=66368 Len=0
10	0.127104	147.102.131.189	TCP	55	147.102.222.210	55647 → 25 [PSH, ACK] Seq=3 Ack=95 Win=131328 Len=1 [

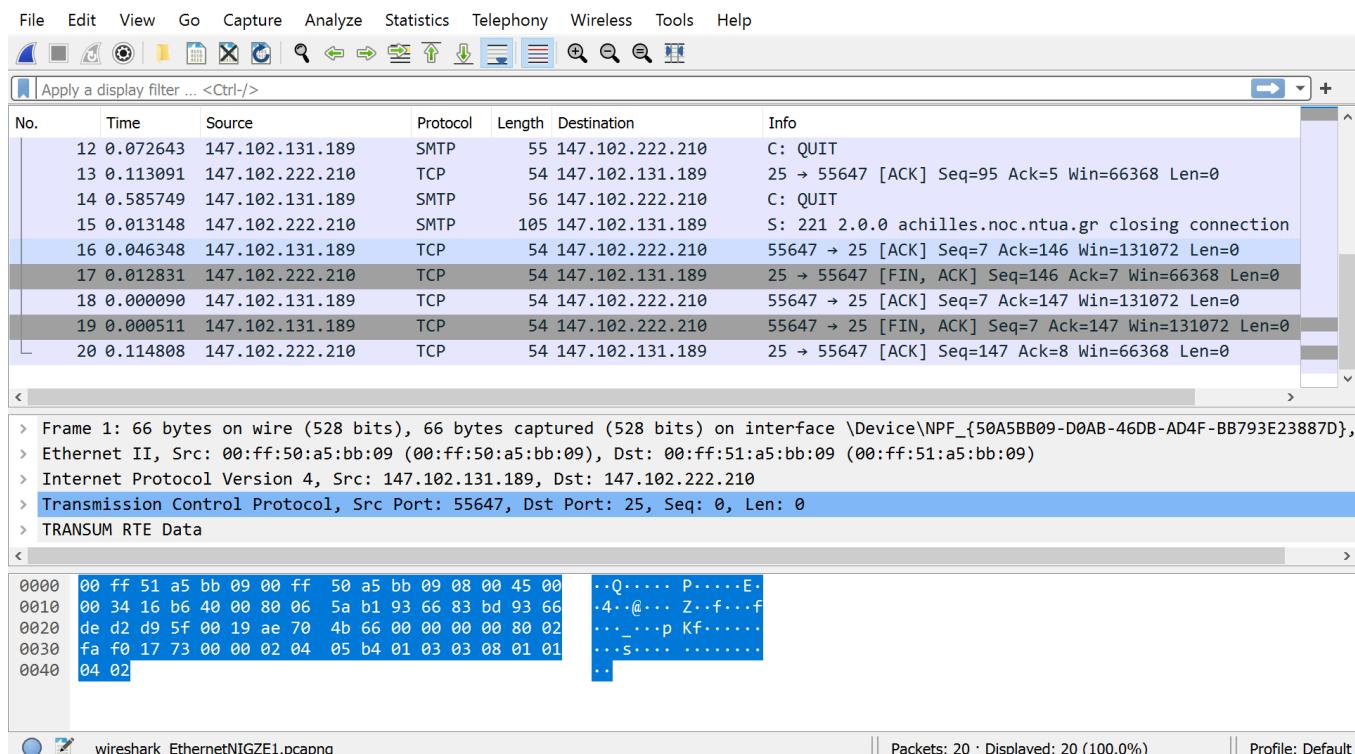
> Frame 1: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF\_{50A5BB09-D0AB-46DB-AD4F-BB793E23887D},  
 > Ethernet II, Src: 00:ff:50:a5:bb:09 (00:ff:50:a5:bb:09), Dst: 00:ff:51:a5:bb:09 (00:ff:51:a5:bb:09)  
 > Internet Protocol Version 4, Src: 147.102.131.189, Dst: 147.102.222.210  
 > Transmission Control Protocol, Src Port: 55647, Dst Port: 25, Seq: 0, Len: 0  
 > TRANSMIT RTE Data

### 1.30 H Port (θύρα) 25

### 1.31 Ένα τεμάχιο

### 1.32 221(ο κωδικός απόκρισης) 2.0.0 achilles.noc.ntua.gr closing connection (η απόκριση)

1.33 Ναι. Η απόλυτη της συνδεσης γίνεται από τον εξυπηρετητή αφού λάβει την εντολή QUIT και ακολουθείται η συνήθης διαδικασία απόλυσης της σύνδεσης με τις σημαίες FIN, ACK.



## 2

2.1 Διεύθυνση MAC: F8-63-3F-59-24-C8, Διεύθυνση IPv4: 192.168.1.4(Preferred), Μάσκα Υποδικτύου: 255.255.255.0, IPv4 DHCP: 192.168.1.1

```
Administrator: Windows PowerShell
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : TAP-Windows Adapter v9
Physical Address. . . . . : 00-FF-50-A5-BB-09
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . : home
Description . . . . . : Intel(R) Dual Band Wireless-AC 8265
Physical Address. . . . . : F8-63-3F-59-24-C8
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2a02:587:2129:d827:9cfcd:220d:985f:ef8f(PREFERRED)
Link-local IPv6 Address . . . . : fe80::c9b9:e62a:36bc:e447%3(PREFERRED)
IPv4 Address. . . . . : 192.168.1.4(PREFERRED)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Δευτέρα, 20 Δεκεμβρίου 2021 5:13:47 μμ
Lease Expires . . . . . : Τρίτη, 21 Δεκεμβρίου 2021 5:13:50 μμ
Default Gateway . . . . . : fe80::1%3
                           192.168.1.1
DHCP Server . . . . . : 192.168.1.1
DHCPv6 IAID . . . . . : 66609983
DHCPv6 Client DUID. . . . . : 00-01-00-01-27-47-6E-E2-F8-63-3F-59-24-C8
DNS Servers . . . . . : fe80::1%3
                           192.168.1.1
                           192.168.1.1
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter vEthernet (Ethernet):

Connection-specific DNS Suffix . :
```

Η εκτέλεση των εντολών:

```
Administrator: Windows PowerShell
PS C:\Windows\system32> ipconfig /release

Windows IP Configuration

No operation can be performed on Τοπική σύνδεση* 1 while it has its media disconnected.
No operation can be performed on Τοπική σύνδεση* 2 while it has its media disconnected.
No operation can be performed on Ethernet while it has its media disconnected.

Ethernet adapter vEthernet (Default Switch):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::5564:1326:6e45:7113%14
  IPv4 Address . . . . . : 172.22.96.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (Wi-Fi):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::20ed:3480:da6a:70d5%46
  IPv4 Address . . . . . : 172.23.112.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . :

Wireless LAN adapter Τοπική σύνδεση* 1:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Τοπική σύνδεση* 2:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Ethernet adapter Ethernet:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::451b:e6fd:ee4e:5117%3
  Default Gateway . . . . . :
```

```
Administrator: Windows PowerShell
PS C:\Windows\system32> ipconfig /renew

Windows IP Configuration

No operation can be performed on Τοπική σύνδεση* 1 while it has its media disconnected.
No operation can be performed on Τοπική σύνδεση* 2 while it has its media disconnected.
No operation can be performed on Ethernet while it has its media disconnected.

Ethernet adapter vEthernet (Ethernet):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::31e4:5723:91ab:31e8%32
  IPv4 Address . . . . . : 172.19.80.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (Ethernet):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::5564:1326:6e45:7113%14
  IPv4 Address . . . . . : 172.22.96.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . :

Ethernet adapter vEthernet (Wi-Fi):

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::20ed:3480:da6a:70d5%46
  IPv4 Address . . . . . : 172.23.112.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . :

Wireless LAN adapter Τοπική σύνδεση* 1:

  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Τοπική σύνδεση* 2:
```

```
Administrator: Windows PowerShell

Wireless LAN adapter Τοπική σύνδεση* 2:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . . . . : 

Ethernet adapter Ethernet:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . . . . : 

Wireless LAN adapter Wi-Fi:
  Connection-specific DNS Suffix . . . . . : home
  Link-local IPv6 Address . . . . . : fe80::451b:e6fd:ee4e:5117%3
  IPv4 Address . . . . . : 192.168.1.4
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.1.1

Ethernet adapter vEthernet (Ethernet):
  Connection-specific DNS Suffix . . . . . : fe80::31e4:5723:91ab:31e8%32
  Link-local IPv6 Address . . . . . : fe80::31e4:5723:91ab:31e8%32
  IPv4 Address . . . . . : 172.19.80.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . : 
PS C:\Windows\system32> ipconfig /renew

Windows IP Configuration

No operation can be performed on Τοπική σύνδεση* 1 while it has its media disconnected.
No operation can be performed on Τοπική σύνδεση* 2 while it has its media disconnected.
No operation can be performed on Ethernet while it has its media disconnected.

Ethernet adapter vEthernet (Default Switch):
  Connection-specific DNS Suffix . . . . . : fe80::5564:1326:6e45:7113%14
  Link-local IPv6 Address . . . . . : fe80::5564:1326:6e45:7113%14
  IPv4 Address . . . . . : 172.22.96.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . : 

Ethernet adapter vEthernet (Wi-Fi):
Administrator: Windows PowerShell

Ethernet adapter vEthernet (Wi-Fi):
  Connection-specific DNS suffix . . . . . : fe80::20ed:3480:da6a:70d5%46
  Link-local IPv6 Address . . . . . : fe80::20ed:3480:da6a:70d5%46
  IPv4 Address . . . . . : 172.23.112.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . : 

Wireless LAN adapter Τοπική σύνδεση* 1:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . . . . : 

Wireless LAN adapter Τοπική σύνδεση* 2:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . . . . : 

Ethernet adapter Ethernet:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . . . . : 

Wireless LAN adapter Wi-Fi:
  Connection-specific DNS Suffix . . . . . : home
  Link-local IPv6 Address . . . . . : fe80::451b:e6fd:ee4e:5117%3
  IPv4 Address . . . . . : 192.168.1.4
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.1.1

Ethernet adapter vEthernet (Ethernet):
  Connection-specific DNS Suffix . . . . . : fe80::31e4:5723:91ab:31e8%32
  Link-local IPv6 Address . . . . . : fe80::31e4:5723:91ab:31e8%32
  IPv4 Address . . . . . : 172.19.80.1
  Subnet Mask . . . . . : 255.255.240.0
  Default Gateway . . . . . : 
PS C:\Windows\system32>
```

## 2.2 dhcp

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

No.	Time	Source	Protocol	Length	Destination	Info
48	0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207	8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248	1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251	0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259	0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531	8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545	0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179	9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181	0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64
1184	0.016601	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

```
> Frame 48: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A767
> Ethernet II, Src: IntelCor_59:24:c8 (f8:63:3f:59:24:c8), Dst: Sercomm_f7:d3:40 (38:02:de:f7:d3:40)
> Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.1
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Release)
```

2.3 DHCP Release, DHCP Discover, DHCP Offer, DHCP Request, DHCP ACK.

2.4 UDP

2.5 DHCP Release: Source Port: bootpc (68) και Destination Port: bootps (67)

DHCP Discover: Source Port: bootpc (68) και Destination Port: bootps (67)

DHCP Offer: Source Port: bootpc (67) και Destination Port: bootps (68)

DHCP Request: Source Port: bootpc (68) και Destination Port: bootps (67)

DHCP ACK: Source Port: bootpc (67) και Destination Port: bootps (68)

2.6 Και οι δύο. bootpc: BOOTP Client, bootps: BOOTP Server

2.7

Dynamic Host Configuration Protocol (Release)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0x7c1d61da
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
Client IP address: 192.168.1.4
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 0.0.0.0
Client MAC address: IntelCor_59:24:c8 (f8:63:3f:59:24:c8)

Message Type	Hardware Type	Hardware Address length	Hops		
Transaction ID					
Seconds Elapsed		Boot flags			
Client IP address					
Your (client) IP address					
Next Server IP address					
Relay agent IP address					
Client MAC address					

←----- 4 Bytes -----→

2.8 Γίνεται κατανοητό από το πεδίο Magic Cookie: DHCP που είναι αναγνωρησικό του DHCP και από το πρώτο πεδίο Option, το DHCP Message Type

## 2.9 Boot Request (1) και Boot Reply (2)

2.10 Client hardware address padding, Server host name, Boot file name, Magic cookie (και τα options)

## 2.11 Όνομα: DHCP Message Type και Κωδικός: 53

2.12 DHCP: Release (7), Length: 1

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

No.	Time	Source	Protocol	Length	Destination	Info
48	0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207	8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248	1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251	0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259	0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531	8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545	0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

Server host name not given  
Boot file name not given  
Magic cookie: DHCP  
v Option: (53) DHCP Message Type (Release)  
    Length: 1  
    DHCP: Release (7)  
    > Option: (54) DHCP Server Identifier (192.168.1.1)  
        Option: (41) Client identifier

DHCP: Discover (1), Length: 1

DHCP: Offer (2), Length: 1

DHCP: Request (3), Length: 1

DHCP: ACK (5), Length: 1

DHCP: Request (3), Length: 1

DHCP: ACK (5), Length: 1

DHCP: Request (3), Length: 1

DHCP: ACK (5), Length: 1

DHCP: ACK (5), Length: 1

2.13 Ήταν το DHCP Release και ο σκοπός του ήταν να αποδεσμεύσει την IP διεύθυνση που του είχε δεσμεύσει ο DHCP server

2.14 Αποστολέας είναι ο υπολογιστής μου και παραλήπτης η Προκαθορισμένη Πύλη (Default Gateway)

2.15 Το μήνυμα Discover και τα 2 πρώτα Request έχουν Src:f8:63:3f:59:24:c8 και Dst: ff:ff:ff:ff:ff:ff

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

No.	Time	Source	Protocol	Length	Destination	Info
48	0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207	8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248	1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251	0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259	0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531	8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545	0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

> Frame 207: 344 bytes on wire (2752 bits), 344 bytes captured (2752 bits) on interface \Device\NPF\_{11981F20-5231-4861-ABD2-DD8A4A76  
> Ethernet II, Src: IntelCor\_59:24:c8 (f8:63:3f:59:24:c8), Dst: Broadcast (ff:ff:ff:ff:ff:ff)  
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255  
> User Datagram Protocol, Src Port: 68, Dst Port: 67  
> Dynamic Host Configuration Protocol (Discover)

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

```
> Frame 531: 364 bytes on wire (2912 bits), 364 bytes captured (2912 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A76
> Ethernet II, Src: IntelCor_59:24:c8 (f8:63:3f:59:24:c8), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Request)
```

Το μήνυμα Offer και τα 2 πρώτα ACK έχουν Src: 38:02:de:f7:d3:40 και Dst: ff:ff:ff:ff:ff:ff

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

```
> Frame 248: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A76
> Ethernet II, Src: Sercomm_f7:d3:40 (38:02:de:f7:d3:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 192.168.1.1, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (Offer)
```

Time	Source	Protocol	Length	Destination	Info
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179 9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181 0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64
1184 0.016601	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

```
> Frame 545: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A76
> Ethernet II, Src: Sercomm_f7:d3:40 (38:02:de:f7:d3:40), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Internet Protocol Version 4, Src: 192.168.1.1, Dst: 255.255.255.255
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (ACK)
```

(2<sup>η</sup> εκτέλεση της εντολής ipconfig /renew: )

Το τελευταίο μήνυμα Request έχει Src:f8:63:3f:59:24:c8 και Dst: 38:02:de:f7:d3:40

The Wireshark interface shows a list of network frames. The 1179 frame is highlighted, showing a DHCP Request from 192.168.1.4 to 192.168.1.1. The details pane below shows the packet structure:

```

> Frame 1179: 358 bytes on wire (2864 bits), 358 bytes captured (2864 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A7
> Ethernet II, Src: IntelCor_59:24:c8 (f8:63:3f:59:24:c8), Dst: Sercomm_f7:d3:40 (38:02:de:f7:d3:40)
> Internet Protocol Version 4, Src: 192.168.1.4, Dst: 192.168.1.1
> User Datagram Protocol, Src Port: 68, Dst Port: 67
> Dynamic Host Configuration Protocol (Request)

```

Και τα 2 τελευταία μηνύματα ACK έχουν Src: 38:02:de:f7:d3:40 και Dst: f8:63:3f:59:24:c8

The Wireshark interface shows a list of network frames. The 1184 frame is highlighted, showing a DHCP ACK from 192.168.1.1 to 192.168.1.4. The details pane below shows the packet structure:

```

> Frame 1184: 590 bytes on wire (4720 bits), 590 bytes captured (4720 bits) on interface \Device\NPF_{11981F20-5231-4861-ABD2-DD8A4A7
> Ethernet II, Src: Sercomm_f7:d3:40 (38:02:de:f7:d3:40), Dst: IntelCor_59:24:c8 (f8:63:3f:59:24:c8)
> Internet Protocol Version 4, Src: 192.168.1.1, Dst: 192.168.1.4
> User Datagram Protocol, Src Port: 67, Dst Port: 68
> Dynamic Host Configuration Protocol (ACK)

```

2.16 Το μήνυμα Discover και τα 2 πρώτα Request έχουν Src:0.0.0.0 και Dst: 255.255.255.255

Το μήνυμα Offer και τα 2 πρώτα ACK έχουν Src: 192.168.1.1 και Dst: 255.255.255.255

(2<sup>η</sup> εκτέλεση της εντολής ipconfig /renew: )

Το τελευταίο μήνυμα Request έχει Src: 192.168.1.4 και Dst: 192.168.1.1

Και τα 2 τελευταία μηνύματα ACK έχουν Src: 192.168.1.1 και Dst: 192.168.1.4

2.17 Σημαίνει ότι γίνεται Broadcast

2.18 Σημαίνει ότι δεν έχει ακόμα διεύθυνση στο τοπικό δικτυo

2.19 Του προτείνει την διεύθυνση 192.168.1.4 η οποία περιέχεται στο πεδίο "Your (client) IP address".

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

```

Hardware address length: 6
Hops: 0
Transaction ID: 0x49a3162c
Seconds elapsed: 0
> Bootp flags: 0x8000, Broadcast flag (Broadcast)
Client IP address: 0.0.0.0
Your (client) IP address: 192.168.1.4
Next server IP address: 0.0.0.0

```

```

0030 16 2c 00 00 80 00 00 00 00 00 c0 a8 01 04 00 00 .,..... . . .
0040 00 00 00 00 00 00 f8 63 3f 59 24 c8 00 00 00 00 .....c ?Y$...
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

```

Your (client) IP address (dhcp.ip.your), 4 byte(s) || Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) || Profile: Default

2.20 Προς την MAC: ff:ff:ff:ff:ff:ff και IPv4: 255.255.255.255 (έγινε Broadcast)

2.21 Όχι δεν είναι, αφού στο πεδίο Bootp flags του Discover έχουμε Unicast και έπειτα η Default Gateway κάνει Broadcast

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

```

Transaction ID: 0x49a3162c
Seconds elapsed: 0
> Bootp flags: 0x0000 (Unicast)
    0.... .... .... = Broadcast flag: Unicast
    .000 0000 0000 0000 = Reserved flags: 0x0000
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0

```

```

0030 16 2c 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .,..... . . .
0040 00 00 00 00 00 00 f8 63 3f 59 24 c8 00 00 00 00 .....c ?Y$...
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

```

Your (client) IP address (dhcp.ip.your), 4 byte(s) || Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) || Profile: Default

2.22 Είναι η επικεφαλίδα Option: (54) DHCP Server Identifier και η διεύθυνση είναι 192.168.1.1

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d

< >

```

> Option: (53) DHCP Message Type (Offer)
< v Option: (54) DHCP Server Identifier (192.168.1.1)
  Length: 4
  DHCP Server Identifier: 192.168.1.1
> Option: (51) IP Address Lease Time
> Option: (1) Subnet Mask (255.255.255.0)
> Option: (3) Router
> Option: (6) Domain Name Server

```

2.23 Είναι η επικεφαλίδα Option: (50) Requested IP Address και η διεύθυνση είναι 192.168.1.4

Time	Source	Protocol	Length	Destination	Info
248 1.625885	192.168.1.1	DHCP	590	255.255.255.255	DHCP Offer - Transaction ID 0x49a3162c
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179 9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181 0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

< >

```

> Option: (53) DHCP Message Type (Request)
> Option: (61) Client identifier
< v Option: (50) Requested IP Address (192.168.1.4)
  Length: 4
  Requested IP Address: 192.168.1.4
> Option: (54) DHCP Server Identifier (192.168.1.1)

```

2.24 Στάλθηκε προς τη διεύθυνση MAC: ff:ff:ff:ff:ff:ff και IPv4: 255.255.255.255

Ο εξυπηρετητής το αναγνωρίζει από το πεδίο Option: (54) DHCP Server Identifier (192.168.1.1) (υποθέτω. Αφού είναι unicast με βάση το boot flag 0, δεν θα πρεπε να εχω έστω μία διεύθυνση εκ των MAC και IPv4 συγκεκριμένες;)

2.25 Αποδίδεται τελικά η διεύθυνση 192.168.1.4, όπως φαίνεται στο πεδίο Your (client) IP address

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179 9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181 0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64
1184 0.016601	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

Seconds elapsed: 0

- > Bootp flags: 0x8000, Broadcast flag (Broadcast)
- Client IP address: 0.0.0.0
- Your (client) IP address: 192.168.1.4
- Next server IP address: 0.0.0.0
- Relay agent IP address: 0.0.0.0
- Client MAC address: IntelCor\_59:24:c8 (f8:63:3f:59:24:c8)
- Client hardware address padding: 000000000000000000000000

```
0030 b3 1d 00 00 80 00 00 00 00 00 c0 a8 01 04 00 00 ..... . .
0040 00 00 00 00 00 00 f8 63 3f 59 24 c8 00 00 00 00 ..... c ?Y$ .
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .

Your (client) IP address (dhcp.ip.your), 4 byte(s) | Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) | Profile: Default
```

## 2.26 Ναι

### 2.27 Είναι 255.255.255.0 και εμπεριέχεται στην Option: Subnet Mask

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179 9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181 0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64
1184 0.016601	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

- > Option: (53) DHCP Message Type (ACK)
- > Option: (54) DHCP Server Identifier (192.168.1.1)
- > Option: (51) IP Address Lease Time
- ✓ Option: (1) Subnet Mask (255.255.255.0)
  - Length: 4
  - Subnet Mask: 255.255.255.0
- > Option: (3) Router
- > Option: (6) Domain Name Server

```
0120 a8 01 01 33 04 00 01 51 80 01 04 ff ff ff 00 03 ..... Q .
0130 04 c0 a8 01 01 06 08 c0 a8 01 01 c0 a8 01 01 0f ..... .
0140 04 68 6f 6d 65 ff 00 00 00 00 00 00 00 00 00 00 home .
0150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0170 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .
0180 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ..... .

DHCP/BOOTP option type (dhcp.option.type), 6 byte(s) | Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) | Profile: Default
```

### 2.28 Διαρκεί για μια ημέρα και αυτή η πληροφορία βρίσκεται στην Option: IP Address Lease Time

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
251 0.001769	0.0.0.0	DHCP	370	255.255.255.255	DHCP Request - Transaction ID 0x49a3162c
259 0.185638	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0x49a3162c
531 8.896636	0.0.0.0	DHCP	364	255.255.255.255	DHCP Request - Transaction ID 0xad2ab31d
545 0.329503	192.168.1.1	DHCP	590	255.255.255.255	DHCP ACK - Transaction ID 0xad2ab31d
1179 9.743417	192.168.1.4	DHCP	358	192.168.1.1	DHCP Request - Transaction ID 0x4e222d64
1181 0.034310	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64
1184 0.016601	192.168.1.1	DHCP	590	192.168.1.4	DHCP ACK - Transaction ID 0x4e222d64

Boot file name not given  
Magic cookie: DHCP  
> Option: (53) DHCP Message Type (ACK)  
> Option: (54) DHCP Server Identifier (192.168.1.1)  
▼ Option: (51) IP Address Lease Time  
Length: 4  
IP Address Lease Time: (86400s) 1 day  
> Option: (1) Subnet Mask (255.255.255.0)

0120	a8	01	01	33	04	00	01	51	80	01	04	ff	ff	ff	00	03	... 3 ... Q .....
0130	04	c0	a8	01	01	06	08	c0	a8	01	01	c0	a8	01	01	0f	.....
0140	04	68	6f	6d	65	ff	00	00	00	00	00	00	00	00	00	00	home .....
0150	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0160	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0170	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0180	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....

DHCP/BOOTP option type (dhcp.option.type), 6 byte(s) || Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) || Profile: Default

## 2.29 55

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

**dhcp**

Time	Source	Protocol	Length	Destination	Info
48 0.000000	192.168.1.4	DHCP	342	192.168.1.1	DHCP Release - Transaction ID 0x7c1d61da
207 8.351333	0.0.0.0	DHCP	344	255.255.255.255	DHCP Discover - Transaction ID 0x49a3162c

▼ Option: (55) Parameter Request List  
Length: 14  
Parameter Request List Item: (1) Subnet Mask  
Parameter Request List Item: (3) Router  
Parameter Request List Item: (6) Domain Name Server  
Parameter Request List Item: (15) Domain Name  
Parameter Request List Item: (31) Perform Router Discover  
Parameter Request List Item: (33) Static Route  
Parameter Request List Item: (43) Vendor-Specific Information  
Parameter Request List Item: (44) NetBIOS over TCP/IP Name Server  
Parameter Request List Item: (46) NetBIOS over TCP/IP Node Type  
Parameter Request List Item: (47) NetBIOS over TCP/IP Scope  
Parameter Request List Item: (119) Domain Search  
Parameter Request List Item: (121) Classless Static Route  
Parameter Request List Item: (249) Private/Classless Static Route (Microsoft)  
Parameter Request List Item: (252) Private/Proxy autodiscovery  
> Option: (255) End

00f0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0100	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....
0110	00	00	00	00	00	00	63	82	53	63	35	01	01	3d	07	01	..... c- Sc5- =..

DHCP/BOOTP option type (dhcp.option.type), 16 byte(s) || Packets: 1391 · Displayed: 10 (0.7%) · Dropped: 0 (0.0%) || Profile: Default

2.30 Parameter Request List Item: (1) Subnet Mask : η τιμή της μάσκας υποδικτύου,

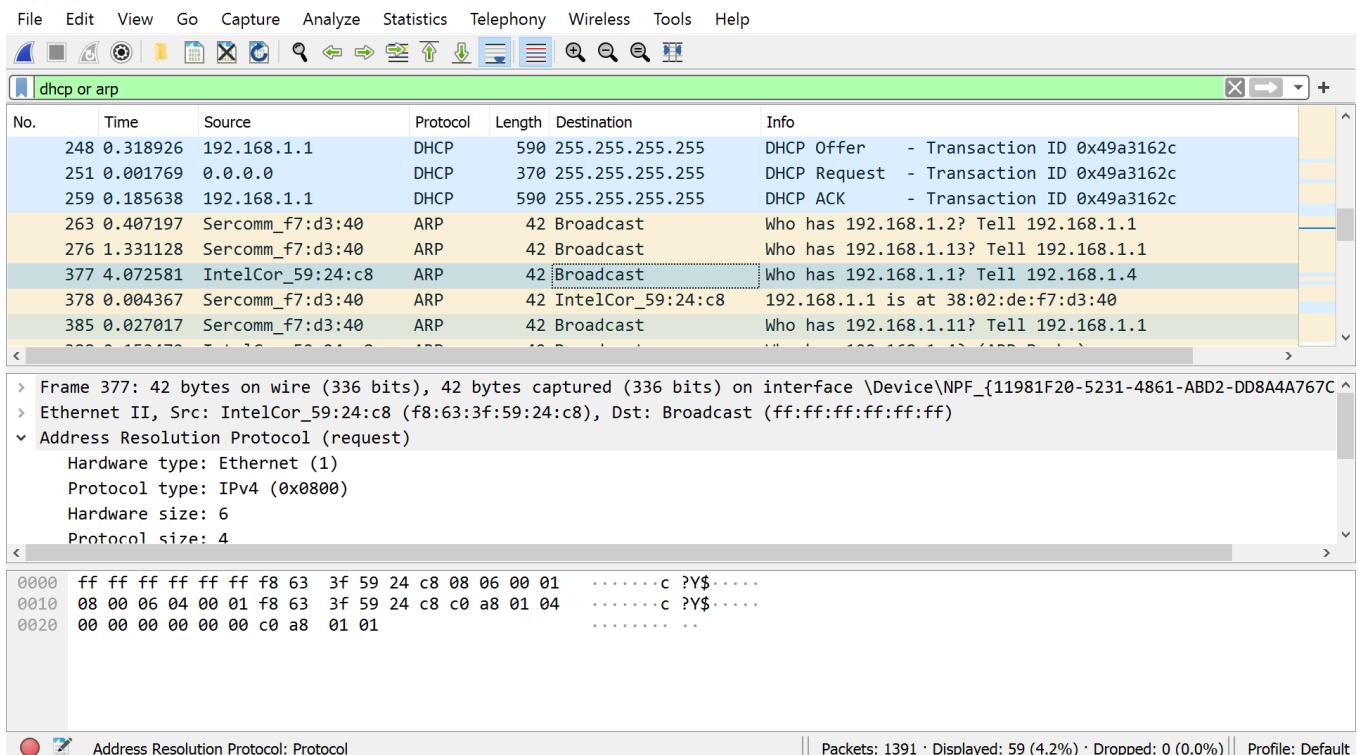
Parameter Request List Item: (3) Router : οι διευθύνσεις των Router,

Parameter Request List Item: (6) Domain Name Server : Οι IP διευθύνσεις των DNS

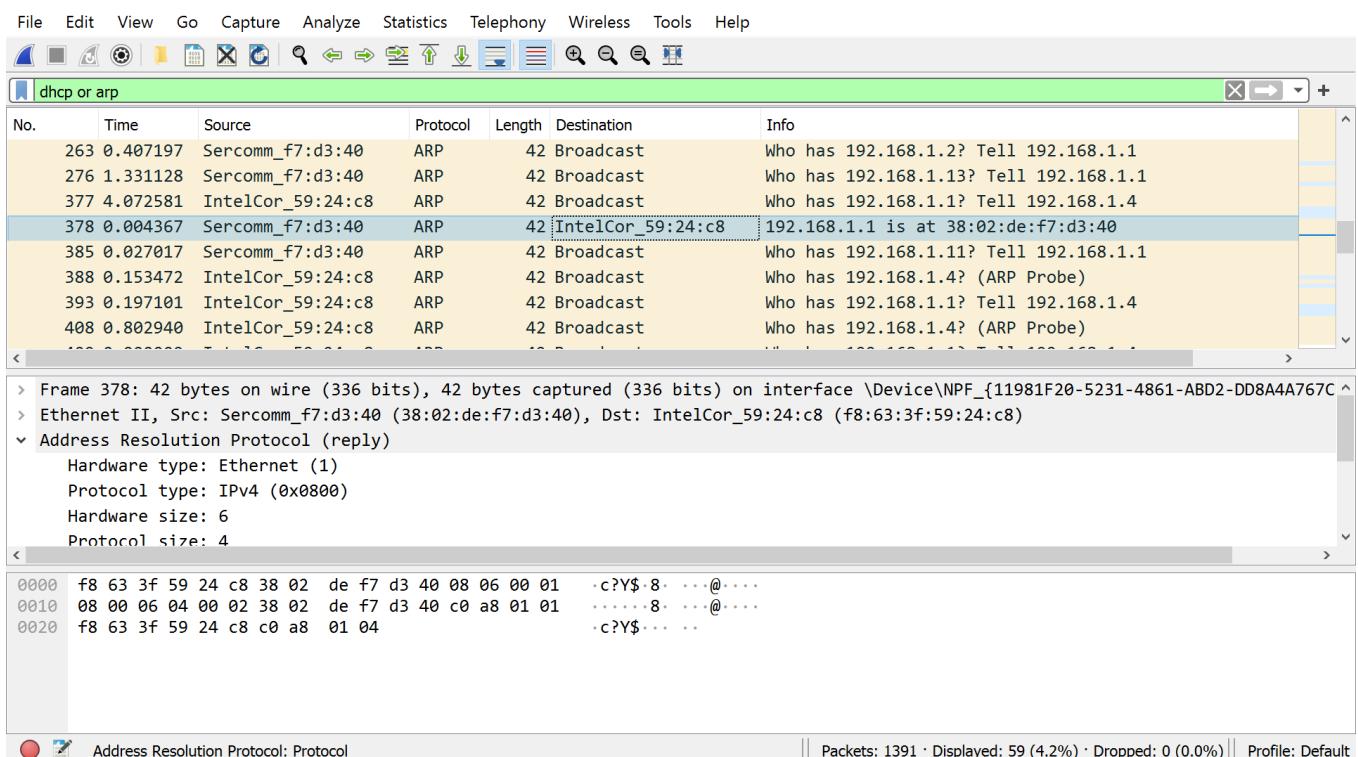
2.31 Ζήτησε 14 παραμέτρους και στο μήνυμα DHCP Offer προσδιορίστηκαν μόνο οι εξείς 4: (1) Subnet Mask, (3) Router, (6) Domain Name Server και (15) Domain Name

2.32 dhcp or arp

## 2.33 Ναι



## 2.34 3 μέχρι να πάρει το reply



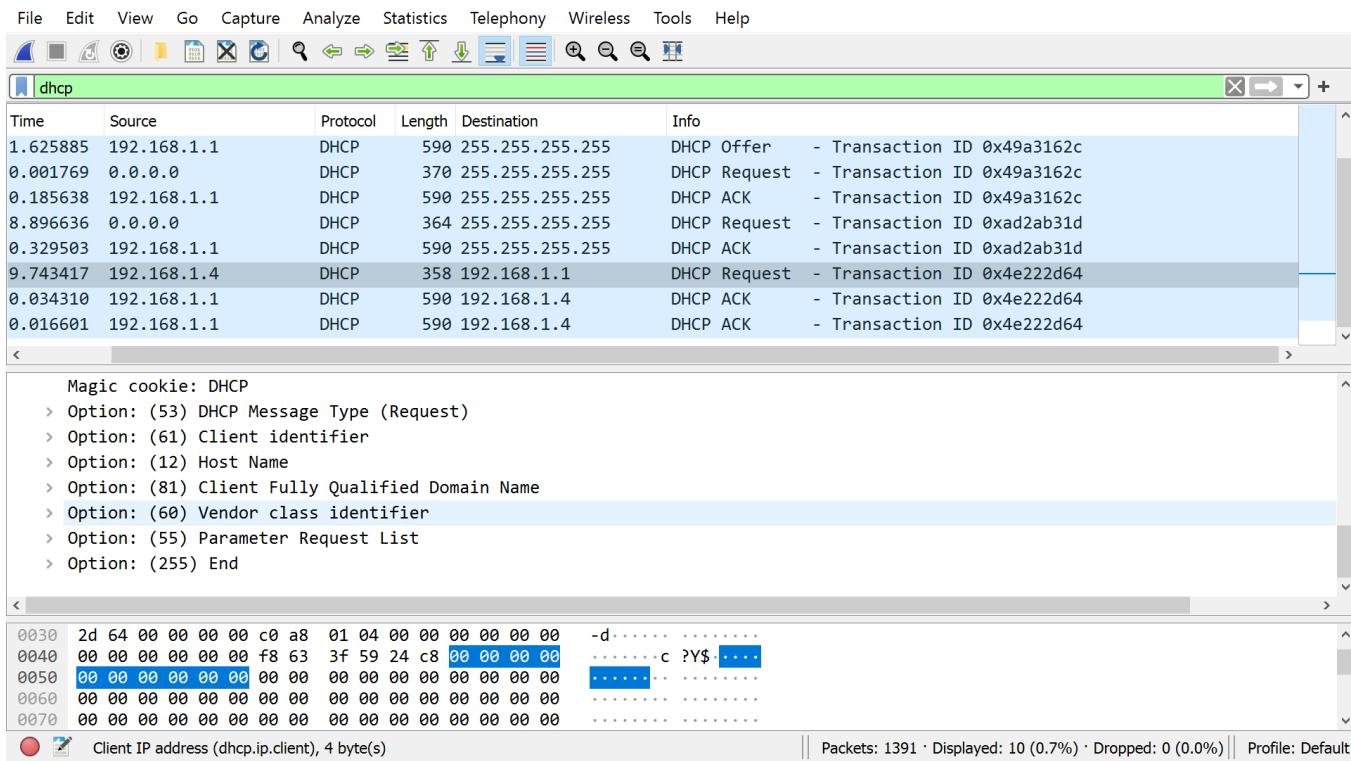
## 2.35 Για τον εαυτό του, δηλαδή την 192.168.1.4

2.36 Ελέγχουν αν αυτή η διεύθυνση είναι ήδη σε χρήση

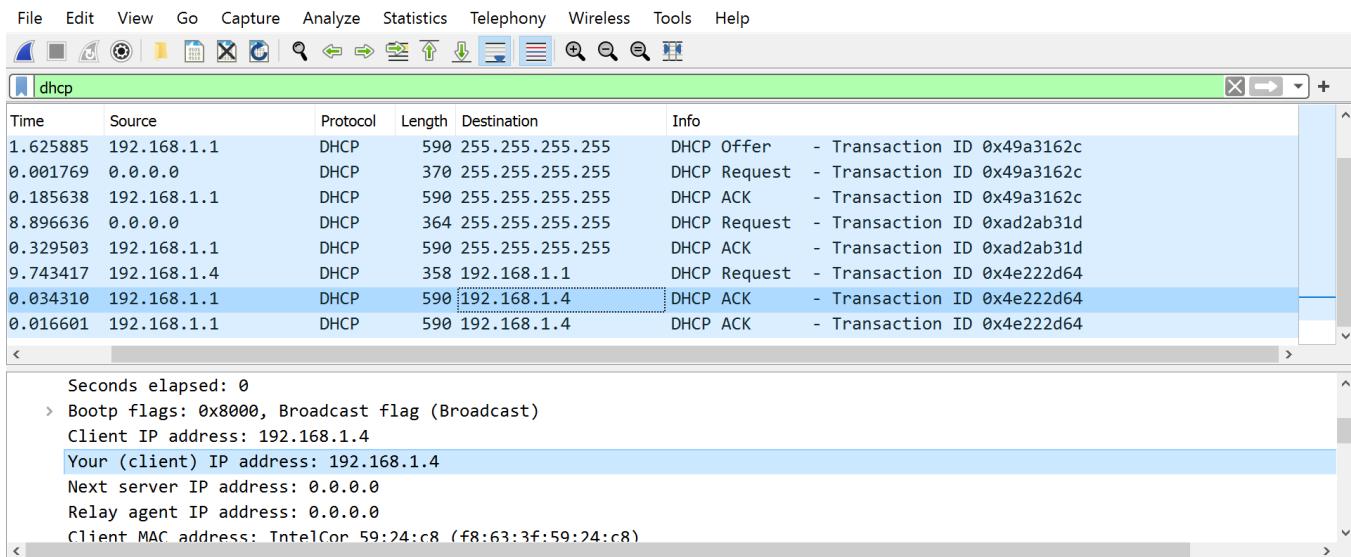
## 2.37 DHCP Request και DHCP ACK

2.38 Διαφέρουν στις διευθύνσεις πηγής και προορισμού (το ανέφερα στα 2.15 και 2.16), στην δομή τους (structure) τα πλαίσια ethernet δεν διαφέρουν καθόλου. Το ίδιο και για τα αντίστοιχα πακέτα IPv4, διαφέρουν στις διευθύνσεις πηγής και προορισμού (το εγραψα στα 2.15 και 2.16) και στο πεδίο Identification, στην δομή τους (structure) τα πακέτα IPv4 δεν διαφέρουν καθόλου

2.39 Βρίσκεται στο Option (50) Request IP Address. Τα μηνύματα DHCP διαφέρουν μόνο στα πεδία Transaction ID, και Option (50) Request IP Address, το οποίο δεν υπάρχει στο DHCP Request της 2<sup>ης</sup> renew



2.40 Στην επικεφαλίδα Your (client) IP address, 192.168.1.4, όχι δεν υπάρχει διαφορά



2.41 Transaction ID: 0x7c1d61da

2.42 Transaction ID: 0x49a3162c

2.43 Transaction ID: 0x4e222d64

2.44 Έχει ως σκοπό τον διαχωρισμό κάθε ακολουθίας μυνημάτων DHCP μεταξύ πελάτη και εξυπηρετητή από τις άλλες (κάθε ακολουθία μυνημάτων DHCP μεταξύ πελάτη και εξυπηρετητή έχει μοναδικό Transaction ID)