

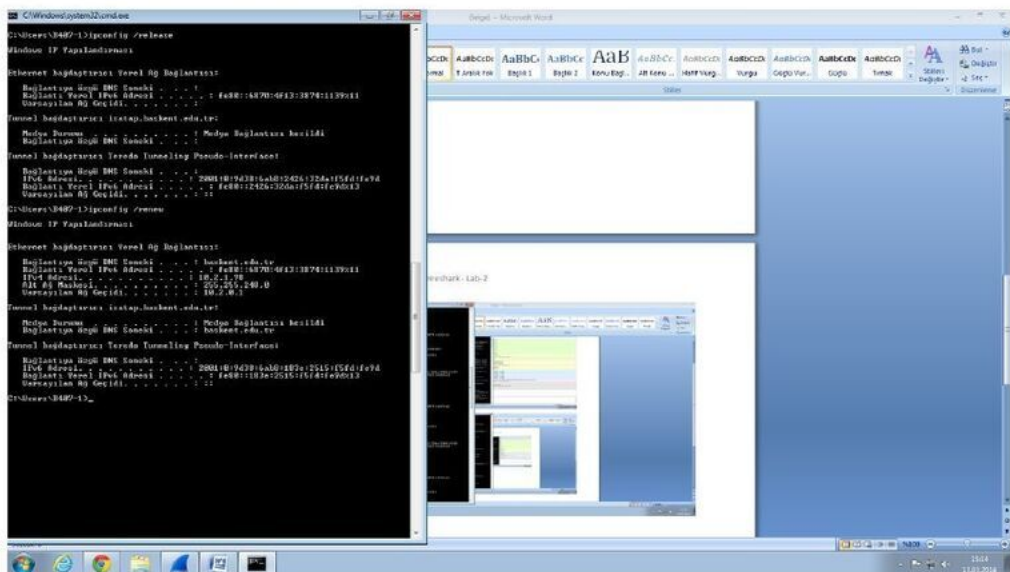
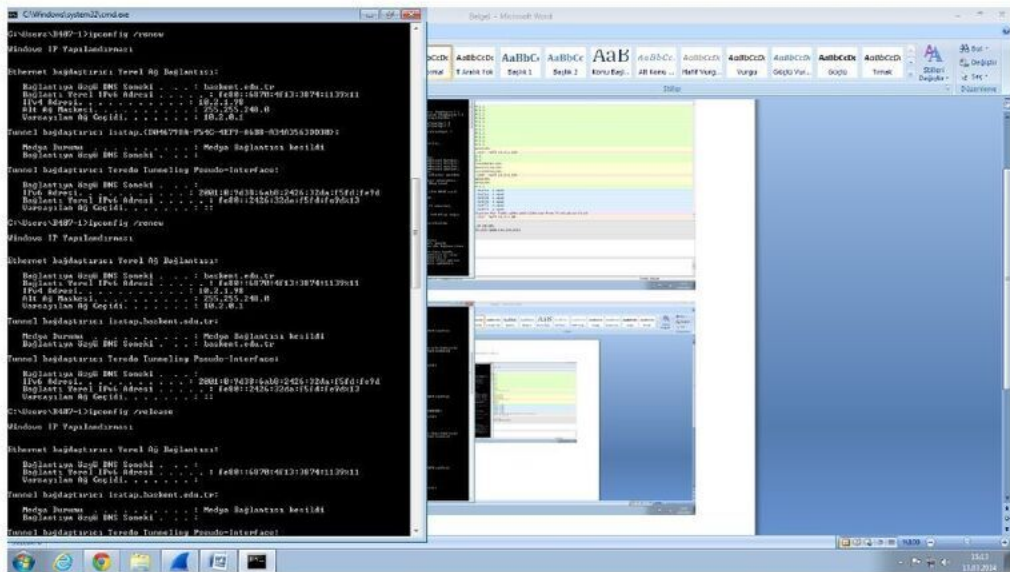


Başkent Üniversitesi
Elektrik - Elektronik Mühendisliği Bölümü

EEM 438

Deney No: 2

[illegible][illegible]



Arama kısmına "*bootp*" yazıldı.

[illegible]

1. Are DHCP messages sent over UDP or TCP?

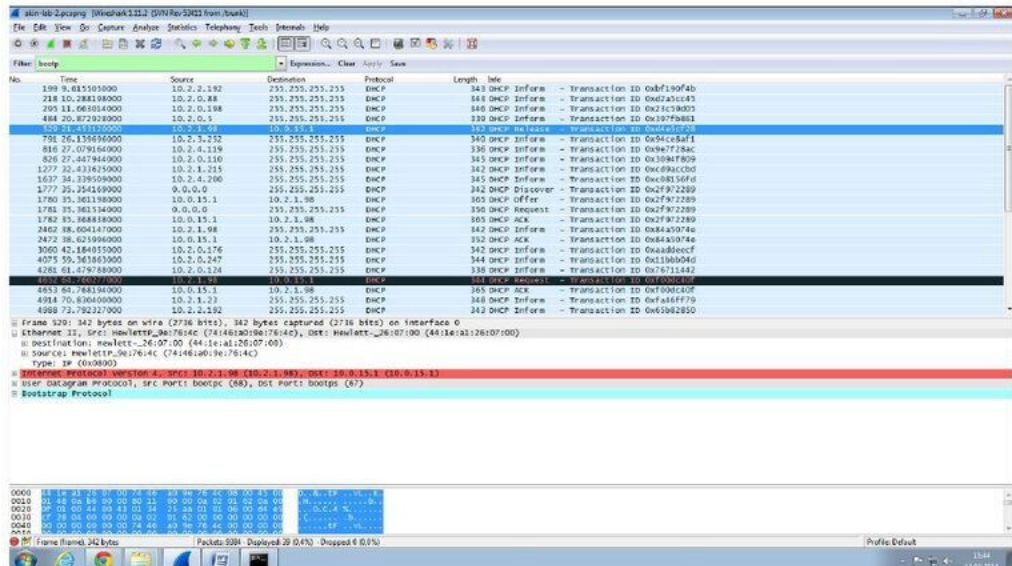
[illegible]

2. Draw a timing datagram illustrating the sequence of the first four-packet Discover/Offer/Request/ACK DHCP exchange between the client and server. For each packet, indicated the source and destination port numbers. Are the port numbers the same as in the example given in this lab assignment?



67,68 port numaraları kullanılmıştır. Herkeste aynı port numaraları gözükmemektedir.

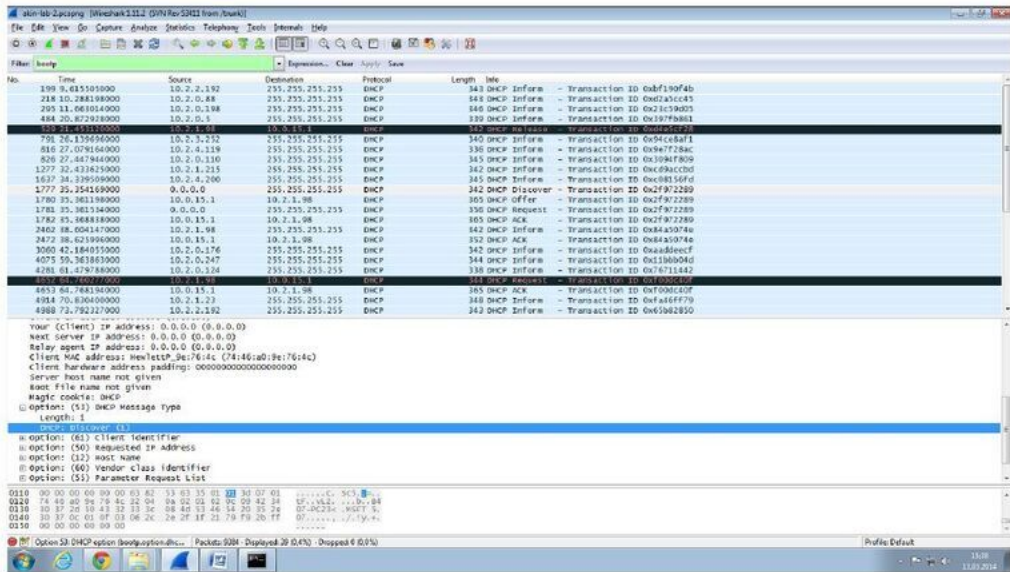
3. What is the link-layer (e.g., Ethernet) address of your host?



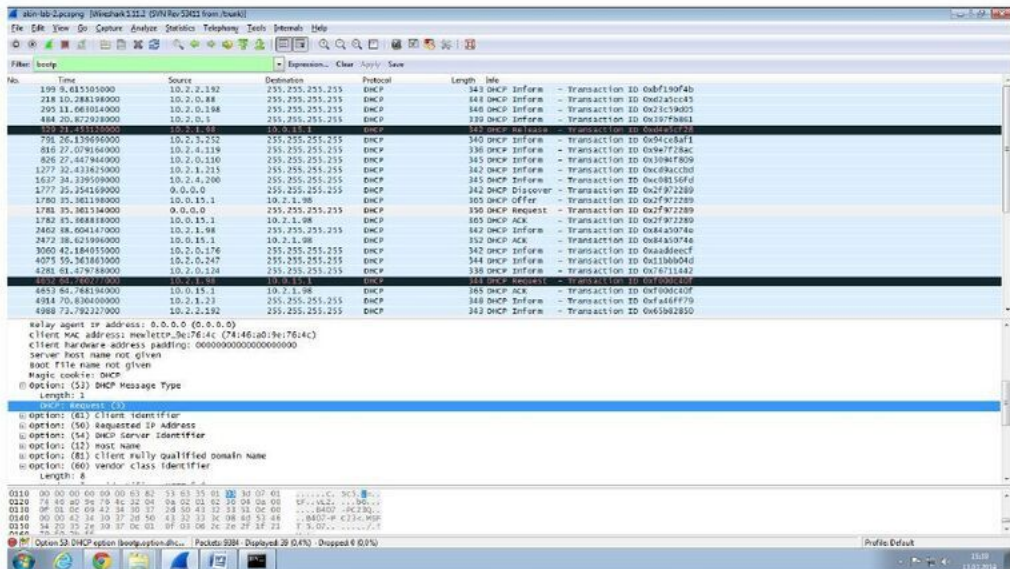
Mac adresim :

Ethernet II, Src: HewlettP_9e:76:4c (74:46:a0:9e:76:4c), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

4. What values in the DHCP discover message differentiate this message from the DHCP request message?



Şekil-a



Şekil-b

Bunlar broadcast olarak yayınlanan mesajlardır farklı olarak tek fark mesaj tipleridir.

Şekil-a) DHCP:Release

Şekil-b) DHCP: Request

5. What is the value of the Transaction-ID in each of the first four (Discover/Offer/Request/ACK) DHCP messages? What are the values of the Transaction-ID in the second set (Request/ACK) set of DHCP messages? What is the purpose of the Transaction-ID field?

No.	Time	Source	Destination	Protocol	Length	Info
199	0.0000000	10.2.2.192	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
218	0.0000000	10.2.0.88	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
295	0.0000000	10.2.0.108	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
484	0.0000000	10.2.0.1	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
522	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
791	0.0000000	10.2.1.212	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
816	0.0000000	10.2.1.119	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
826	0.0000000	10.2.0.110	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
1277	0.0000000	10.2.1.215	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
1637	0.0000000	10.2.1.215	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
1780	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
1781	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
1782	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
2462	0.0000000	10.2.1.98	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
2472	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
3060	0.0000000	10.2.0.176	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4075	0.0000000	10.2.0.247	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4281	0.0000000	10.2.0.124	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4453	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4512	0.0000000	10.2.1.98	10.2.1.98	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4814	0.0000000	10.2.1.23	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289
4909	0.0000000	10.2.2.192	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x2f972289

Frame 1777: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0

Ethernet II, Src: Realtek_901764c (78:46:00:00:00:00), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

Destination: Broadcast (ff:ff:ff:ff:ff:ff)

Source: Realtek_901764c (78:46:00:00:00:00)

Type: IP (0x0800)

Internet Protocol Version 4, Src: 0.0.0.0 (0.0.0.0), Dst: 255.255.255.255 (255.255.255.255)

User Datagram Protocol, Src Port: bootpc (68), Dst Port: bootps (67)

Bootstrap Protocol

Message type: Boot Request (1)

Hardware type: Ethernet (0x01)

Hardware address length: 6

Hops: 0

Transaction ID: 0x2f972289

Seconds elapsed: 0

Bootp Flags: 0x0000 (unicast)

Client IP address: 0.0.0.0 (0.0.0.0)

0000 ff ff ff ff ff ff 76 4c 40 96 76 4c 08 00 45 00 E...VL...E...

0018 08 00 45 00 45 00 80 21 24 c7 00 00 00 00 ff C...L...E...E...

0030 ff ff 00 45 00 45 00 81 01 34 01 01 00 00 2f 67 C...L...E...E...

0048 22 49 00 00 00 00 00 00 00 00 00 00 00 00 00 E...L...E...E...

0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E...L...E...E...

0078 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E...L...E...E...

0096 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E...L...E...E...

İsteklerin karışmaması için her isteme bir adet kod veriliyor. Böylece istek server tarafından anlaşılıyor ve karışmıyor.

Benim 4 lü aynı olan Transaction ID numaram: 0x2f972289

6. A host uses DHCP to obtain an IP address, among other things. But a host's IP address is not confirmed until the end of the four-message exchange! If the IP address is not set until the end of the four-message exchange, then what values are used in the IP datagrams in the four-message exchange? For each of the four DHCP messages (Discover/Offer/Request/ACK DHCP), indicate the source and destination IP addresses that are carried in the encapsulating IP datagram.

No.	Time	Source	Destination	Protocol	Length	Info
199	9.613105000	10.2.2.192	255.255.255.255	DHCP	343	DHCP Inform - Transaction ID 0xbdf190f4b
218	10.288198000	10.2.0.88	255.255.255.255	DHCP	343	DHCP Inform - Transaction ID 0x02a2cc45
295	11.663014000	10.2.0.198	255.255.255.255	DHCP	346	DHCP Inform - Transaction ID 0x21c3b0d5
484	20.872928000	10.2.0.5	255.255.255.255	DHCP	339	DHCP Inform - Transaction ID 0x397fb061
529	21.453120000	10.2.1.98	10.0.15.1	DHCP	342	DHCP Release - Transaction ID 0x01e1cfc28
791	26.136496000	10.2.3.252	255.255.255.255	DHCP	340	DHCP Inform - Transaction ID 0x04ce8af1
816	27.079194000	10.2.4.119	255.255.255.255	DHCP	336	DHCP Inform - Transaction ID 0x9aef28ac
826	27.447944000	10.2.0.110	255.255.255.255	DHCP	345	DHCP Inform - Transaction ID 0x3094f809
1277	32.433621000	10.2.1.215	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0xcd9accbd
1637	34.339590000	10.2.4.200	255.255.255.255	DHCP	345	DHCP Inform - Transaction ID 0xc08350fd
1777	35.321175000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x2f972289
1790	35.361198000	10.0.15.1	10.2.1.98	DHCP	365	DHCP Offer - Transaction ID 0x2f972289
1781	35.361534000	0.0.0.0	255.255.255.255	DHCP	356	DHCP Request - Transaction ID 0x2f972289
1782	35.364818000	10.0.15.1	10.2.1.98	DHCP	365	DHCP ACK - Transaction ID 0x2f972289
2462	38.604147000	10.2.1.98	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x81a5074e
2472	38.625996000	10.0.15.1	10.2.1.98	DHCP	352	DHCP ACK - Transaction ID 0x81a5074e
3060	42.184055000	10.2.0.176	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0xaad0eeef
4073	59.361892000	10.2.0.247	255.255.255.255	DHCP	344	DHCP Inform - Transaction ID 0x11b0b0ad
4741	64.470742000	10.2.0.434	192.168.1.100	HTTP	228	HTTP Transfer - Transaction ID 0x76744443

Frame 1777: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface 0
 Ethernet II, Src: Hewlett-Packard (74:4b:a0:9e:76:4c), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
 Internet Protocol Version 4, Src: 0.0.0.0 (0.0.0.0), Dst: 255.255.255.255 (255.255.255.255)
 User Datagram Protocol, Src Port: bootpc (68), Dst Port: bootps (67)
 Bootstrap Protocol

0000 ff ff ff ff ff 74 4b a0 9e 76 4c 08 00 45 00 TF..V...E..
 0010 01 49 0a d7 00 00 80 11 24 cf 00 00 00 00 ff ff R.....
 0020 ff ff 00 44 00 43 01 34 03 45 00 01 00 00 2f 97 D.C..E.....
 0030 22 89 00 00 00 00 00 00 00 00 00 00 00 00 00
 0040 00 00 00 00 00 00 74 4b a0 9e 76 4c 00 00 00 TF..V...E..
 0050

DHCP Discovery ve Request için destination adresi 255.255.255.255 source için 0.0.0.0 adresini kullanmaktadır.

Offer ve ACK için ise gerçek ip adreslerini kullanmaktadır.

7. What is the IP address of your DHCP server?

Wireshark packet capture showing DHCP traffic. The packet list shows a DHCP Offer message (No. 1780) from 10.0.15.1 to 10.0.1.1. The packet details pane shows the DHCP Offer message structure, including the 'next server' field set to 10.0.15.1. The packet bytes pane shows the raw data of the DHCP Offer message.

Benim offerda yer alan source adresim : 10.0.15.1

8. What IP address is the DHCP server offering to your host in the DHCP Offer message? Indicate which DHCP message contains the offered DHCP address.

Wireshark packet capture showing DHCP traffic. The packet list shows a DHCP Offer message (No. 1780) from 10.0.15.1 to 10.0.1.1. The packet details pane shows the DHCP Offer message structure, including the 'next server' field set to 10.0.15.1. The packet bytes pane shows the raw data of the DHCP Offer message.

Bana verilen ip adresi bu şekildedir.

Your (client) IP address: 10.2.1.98 (10.2.1.98)

10. Explain the purpose of the router and subnet mask lines in the DHCP offer message.

The screenshot shows a DHCP Offer packet (No. 453) from 10.2.2.192 to 10.2.0.88. The packet details show options including Subnet Mask (255.255.255.255) and Router (10.2.0.1). The packet bytes show the DHCP Offer structure with magic cookie, message type, client identifier, and options.

Option: (1) Subnet Mask : Hangi "subnet mask"ın kullanılacağını söyler.

Option: (3) Router: Varsayılan ağ geçidinin ne olması gerektiğini söyler.

11. In the example screenshots in this assignment, the host requests the offered IP address in the DHCP Request message. What happens in your own experiment?

The screenshot shows a DHCP Request packet (No. 454) from 10.2.2.192 to 10.2.0.88. The packet details show options including Requested IP Address (10.2.1.98) and Server Identifier (10.2.2.192). The packet bytes show the DHCP Request structure with magic cookie, message type, client identifier, and options.

Yapılan deneyde, sonucu verilen ip adresini kabul ettiğini göstermektedir.

12. Explain the purpose of the lease time. How long is the lease time in your experiment?

File Edit View Go Capture Analyzer Statistics Telephony Tools Help

Filter: bootp

Expression: Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
199	0.451510000	10.2.2.192	255.255.255.255	DHCP	343	DHCP Inform - Transaction ID 0x6f190fab
218	10.288198000	10.2.0.88	255.255.255.255	DHCP	348	DHCP Inform - Transaction ID 0x6d2a1cc45
295	11.081014000	10.2.0.198	255.255.255.255	DHCP	348	DHCP Inform - Transaction ID 0x21c1b0d5
484	20.873938000	10.2.0.1	255.255.255.255	DHCP	339	DHCP Inform - Transaction ID 0x3979a8d1
502	21.431185000	10.2.0.1	10.2.0.1	DHCP	342	DHCP Discover - Transaction ID 0x6f40f420
758	26.339096000	10.2.3.232	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x6f40f420
816	27.079164000	10.2.0.119	255.255.255.255	DHCP	336	DHCP Inform - Transaction ID 0x9e7728ac
829	27.487844000	10.2.0.110	255.255.255.255	DHCP	345	DHCP Inform - Transaction ID 0x3994f809
1277	32.433825000	10.2.1.255	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x6d9acc0d
1637	34.339509000	10.2.4.200	255.255.255.255	DHCP	345	DHCP Inform - Transaction ID 0x68b56fd
1777	35.254169000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x2f972289
1780	35.361198000	10.0.15.1	10.2.1.98	DHCP	360	DHCP Offer - Transaction ID 0x2f972289
1781	35.361194000	0.0.0.0	255.255.255.255	DHCP	336	DHCP Request - Transaction ID 0x2f972289
1782	35.368818000	10.0.15.1	10.2.1.98	DHCP	360	DHCP ACK - Transaction ID 0x2f972289
2462	38.604147000	10.2.1.98	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x6a1a074e
2472	38.621994000	10.0.15.1	10.2.1.98	DHCP	352	DHCP ACK - Transaction ID 0x6a1a074e
3040	42.184055000	10.2.0.176	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x6a1a074e
4075	59.361863000	10.2.0.247	255.255.255.255	DHCP	344	DHCP Inform - Transaction ID 0x13b006d
4281	61.478783000	10.2.0.134	255.255.255.255	DHCP	338	DHCP Inform - Transaction ID 0x76711442
4853	64.788190000	10.0.15.1	10.2.1.98	DHCP	360	DHCP ACK - Transaction ID 0x7000c0f
4914	70.830406000	10.2.1.23	255.255.255.255	DHCP	348	DHCP Inform - Transaction ID 0x6a1a07f9
4988	72.792127000	10.2.2.192	255.255.255.255	DHCP	342	DHCP Inform - Transaction ID 0x659d2850

server host name not given

boot file name not given

Magic cookie: DHCP

Options: (52) DHCP Message Type

Options: (54) Renewal Time value

Options: (59) Rebinding Time value

Options: (51) IP Address Lease Time

Length: 4

Options: (54) DHCP Server Identifier

Options: (1) Subnet mask

Options: (15) domain name

Options: (3) router

Options: (6) domain name server

Options: (44) NetBIOS over TCP/IP Name Server

Options: (46) NetBIOS over TCP/IP Node Type

Options: (51) IP Address Lease Time: 864000s (10 days)

Options: (54) DHCP Server Identifier

Options: (1) Subnet mask

Options: (15) domain name

Options: (3) router

Options: (6) domain name server

Options: (44) NetBIOS over TCP/IP Name Server

Options: (46) NetBIOS over TCP/IP Node Type

0.016 0.00 97.80 19.04 0.00 0.00 0.00 39 33 0.00 0.00 0.00 36

0.018 0.00 94.90 0.00 0.00 0.00 0.00 33 33 0.00 0.00 0.00 33

0.048 0.00 68.64 74.23 65.64 71.34 74.72 50.00 0.00 0.00 0.00 62

0.160 0.00 0.00 68.68 0.00 0.00 0.00 86.34 14.25 23.08 0.00 0.00

0.168 0.01 26.03 28.05 25.06 8.73 0.04 0.00 0.00 0.00

Option 51: IP Address Lease Time: 864000s (10 days)

Packets: 50/20 Displayed: 20 (40%) - Dropped: 6 (6%)

Profile Default

13/10/2019 16:08

[illegible]
