PLANIFICACIÓN Y ADMINISTRACIÓN DE REDES

CENTRO TRES CANTOS

Grado Superior en Administración de Sistemas Informáticos en Red

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CONTENIDO

REALIZACIÓN DE LA ACTIVIDAD

Enumera y explica la función de cada protocolo que a parecen en la grabación:

MDNS (Multicast DNS) Es un servicio en el que se encarga de la resolución de nombres de host en direcciones IP sin la necesidad de una configuración predeterminada.

SSDP (Simple Service Discovery Protocol) Es un protocolo en el que nos sirve para la búsqueda de los dispositivos *UPnP (Universal Plug and Play*) en una red.

Nota: un UPNP es un protocolo que nos permite que los dispositivos que se encuentren en la red y que sean compatibles, puedan poder detectar la presencia de otro dispositivo como consecuencia crean canales de comunicación directa con Internet

LLDP (Link Layer Discovery Protocol) Es un protocolo de detección de vecino que se encuentra en la capa 2 con la finalidad de que los dispositivos transmitan información de los dispositivos pares que se encuentran conectados directamente.

UDP (User Datagram Protocol) Es un protocolo mínimo que se encuentra en el nivel de transporte con la finalidad del intercambio de datagramas. Con la finalidad de que se pueda enviar datagramas en la red sin que se haya establecido una conexión anteriormente.

DNS (Domain Name System) Es un Sistema descentralizado para los dispositivos conectados a redes IP o una red privada. Es como una "agenda telefónica" que se encuentra en la web donde organiza e identifica dominios.

TLSV1.2(Transport Layer Security) Es un protocolo de Internet con perfil de seguridad que se encuentra en la capa de transporte en el que son protocolos criptográficos con la finalidad de que nos proporciones comunicaciones seguras por una red.

TCP (Transfer Control Protocol) Es un protocolo de red importante que nos permite que entre dos hosts se puedan conectar y que puedan conectar e intercambio el flujo de datos.

QUIC (Quick UDP Internet Connections**)** Es un protocolo de red en perfil experimental sobre la capa de transporte. Nos proporciona una base para nuevas aplicaciones como HTTP.

ARP (Address Resolution Protocol) Es un protocolo de comunicaciones que se encuentra en la capa de enlace de datos en la que es responsable de poder encontrar dirección MAC que corresponda a una dirección IP.

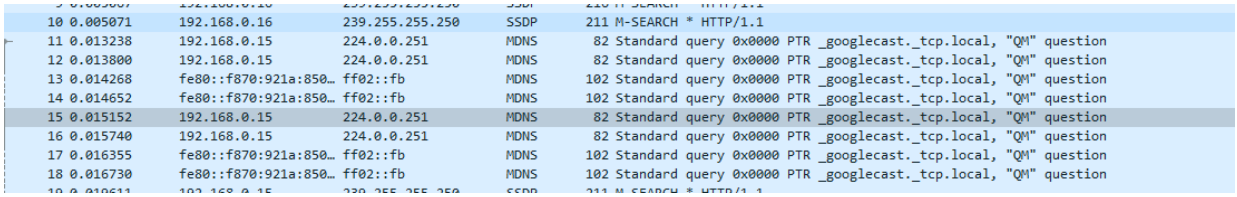
IGMP V3 (Internet Group Management Protocol) Es un protocolo de comunicaciones que permite poder intercambiar información sobre el estado que se encuentra los enrutadores de IP sobre la multidifusión o miembros de grupos de multidifusión.

ICMPV3(Internet Control Message Protocol) Es un protocolo en el que nos permite enviar mensajes de error e información operativas indicando por ejemplo un host deslocalizado o un servicio que no se encuentras activo.

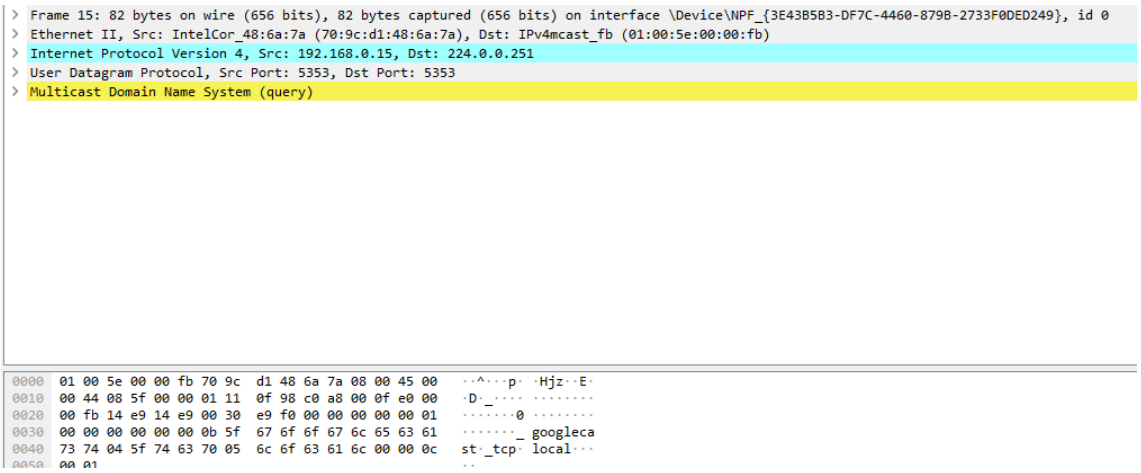
Indica las capas que tiene y explica los datos más relevantes e interesantes que aparecen:

- MDNS

En este caso nosotros vamos a elegir el número 15 donde vamos a explicar posteriormente sus capas:



Nos encontramos con que tiene 5 capas:



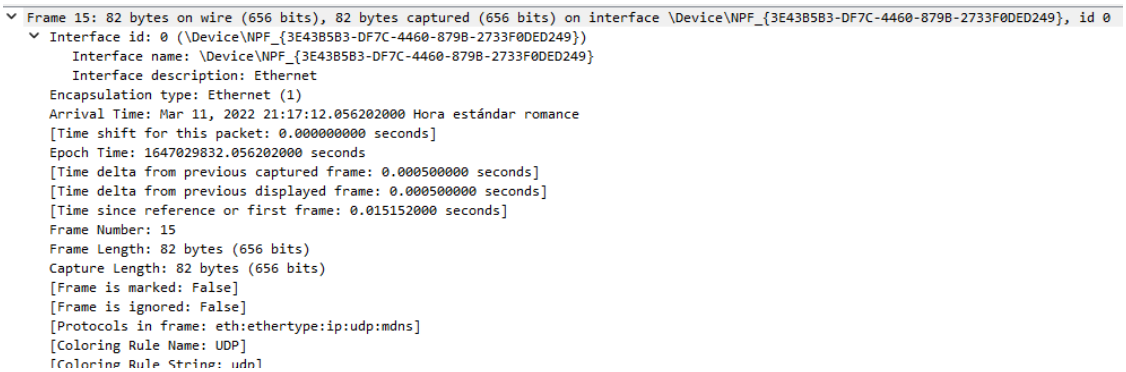
Frame15: 82 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:12

Número de cuadro: 15

Longitud de cuadro: 82 bytes (656 bits)



Ethernet II

Destinación: IPV4mcast_fb(01:00:5e:00:00:fb)

Fuente: IntelCor 48:6a 7a (70:9c:d1:48:6ª:7a)

Tipo: IPV4

```
Ethernet II, Src: IntelCor_48:6a:7a (70:9c:d1:48:6a:7a), Dst: IPv4mcast_fb (01:00:5e:00:00:fb)
  Destination: IPv4mcast_fb (01:00:5e:00:00:fb)
       Address: IPv4mcast_fb (01:00:5e:00:00:fb)
       .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
       .... ...1 .... .... .... .... = IG bit: Group address (multicast/broadcast)
  Source: IntelCor_48:6a:7a (70:9c:d1:48:6a:7a)
       Address: IntelCor_48:6a:7a (70:9c:d1:48:6a:7a)
       .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
       .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
```

Internet Protocol Versión 4

Versión :4

Identificación: 0x0x85f (2143)

Longitud de cuadro : 68

Protocolo: UDP (17)

```
Internet Protocol Version 4, Src: 192.168.0.15, Dst: 224.0.0.251
   0100 .... = Version: 4
   .... 0101 = Header Length: 20 bytes (5)
  Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
   Total Length: 68
   Identification: 0x085f (2143)
  Flags: 0x00
      0... .... = Reserved bit: Not set
      .0.. .... = Don't fragment: Not set
      ..0. .... = More fragments: Not set
   ...0 0000 0000 0000 = Fragment Offset: 0
  Time to Live: 1
    [Expert Info (Note/Sequence): "Time To Live" != 255 for a packet sent to the Local Network Control Block (see RFC 3171)]
   Protocol: UDP (17)
   Header Checksum: 0x0f98 [validation disabled]
   [Header checksum status: Unverified]
   Source Address: 192.168.0.15
   Destination Address: 224.0.0.251
```

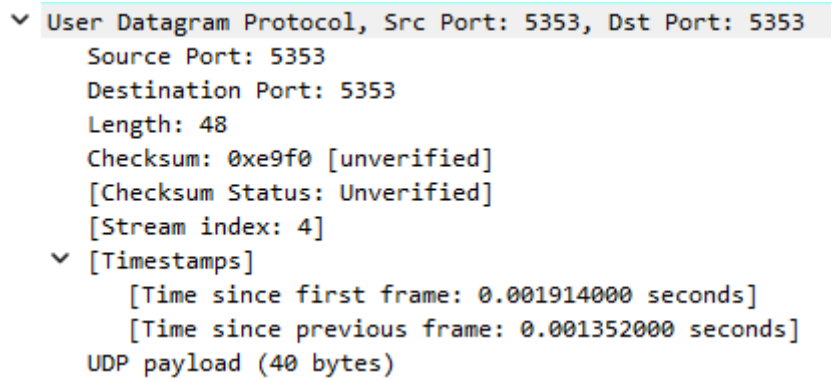
User Daragram Protocol

Puerto de origen: 5353

Puerto de destino: 5353

Longitud: 48

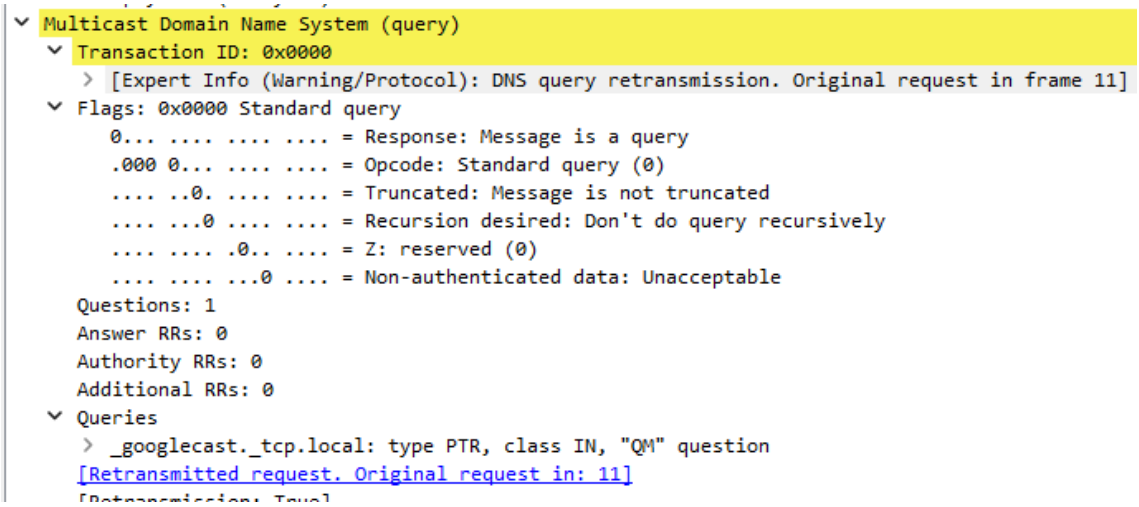
Suma de control: Inconfirmado



Multicast Domain Name System

ID de la transición: 0x0000

Queries: _googlecast._tcp.local:type PTR, class IN “QM” question

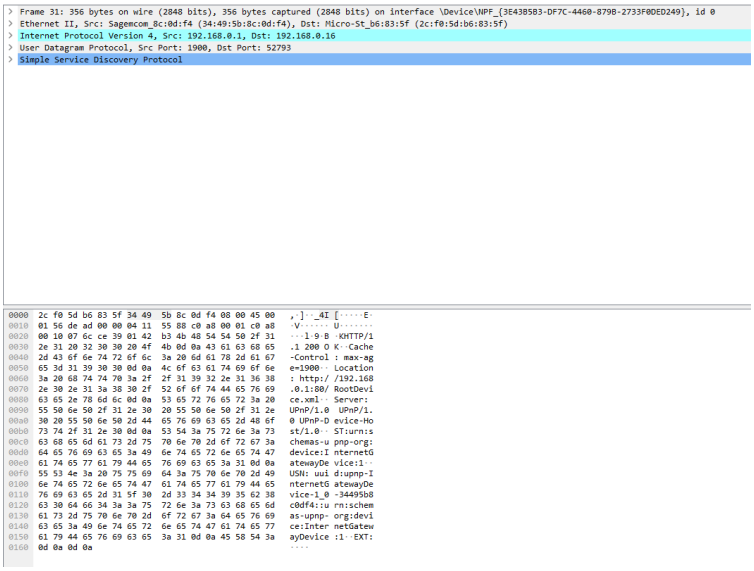


- SSDP

En este caso nosotros vamos a elegir el número 31 donde vamos a explicar posteriormente sus capas:

27	0.461905	fe80::b165:5d30:b4d…	ff02::fb	MDNS	107 Standard query 0x0000 PTR _spotify-connect._tcp.local, "QM" question
28	0.464815	192.168.0.15	224.0.0.251	MDNS	87 Standard query 0x0000 PTR _spotify-connect._tcp.local, "QM" question
29	0.465290	fe80::f870:921a:850…	ff02::fb	MDNS	107 Standard query 0x0000 PTR _spotify-connect._tcp.local, "QM" question
30	0.693231	192.168.0.16	239.255.255.250	SSDP	179 M-SEARCH * HTTP/1.1
31	0.697499	192.168.0.1	192.168.0.16	SSDP	356 HTTP/1.1 200 OK
32	1.003965	192.168.0.16	224.0.0.251	MDNS	82 Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
33	1.003965	192.168.0.16	224.0.0.251	MDNS	82 Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
34	1.004152	fe80::b165:5d30:b4d…	ff02::fb	MDNS	102 Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
35	1.004153	fe80::b165:5d30:b4d…	ff02::fb	MDNS	102 Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question

Nos encontramos con que tiene 5 capas:



Frame31: 356 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:12

Número de cuadro: 31

Longitud de cuadro: 356 bytes(2824bit)

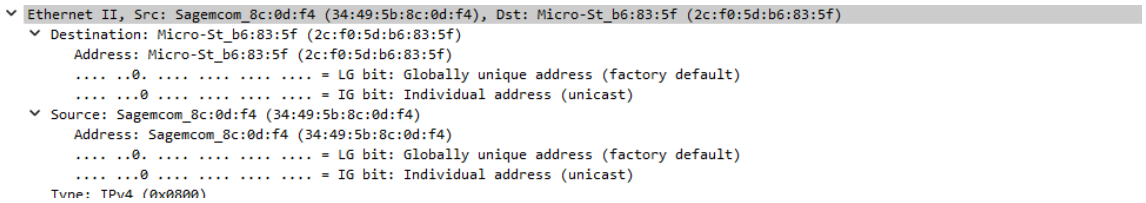
```
Frame 31: 356 bytes on wire (2848 bits), 356 bytes captured (2848 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id 0
  Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
      Interface name: \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}
      Interface description: Ethernet
    Encapsulation type: Ethernet (1)
    Arrival Time: Mar 11, 2022 21:17:12.738549000 Hora estándar romance
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1647029832.738549000 seconds
    [Time delta from previous captured frame: 0.004268000 seconds]
    [Time delta from previous displayed frame: 0.004268000 seconds]
    [Time since reference or first frame: 0.697499000 seconds]
    Frame Number: 31
    Frame Length: 356 bytes (2848 bits)
    Capture Length: 356 bytes (2848 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:ip:udp:ssdp]
    [Coloring Rule Name: TTL low or unexpected]
    [Coloring Rule String: ( ! ip.dst == 224.0.0.0/4 && ip.ttl < 5 && !pim && !ospf) || (ip.dst == 224.0.0.0/24 && ip.dst != 224.0.0.251 && ip.ttl !
```

Ethernet II

Destino: Micro-St_b6:83:5f

Fuente: Sagmecom_8c:0d:f4

Tipo: IPV4 (0x800)



Internet Protocol Versión 4

Versión :4

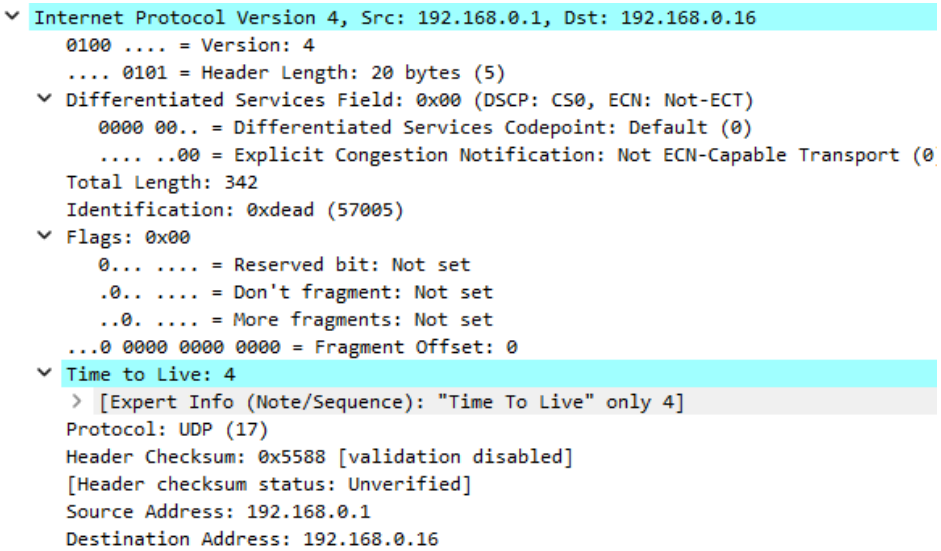
Identificación: 0xdead (57005)

Longitud de cuadro: 342

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.1

Dirección de destino: 192.168.0.16



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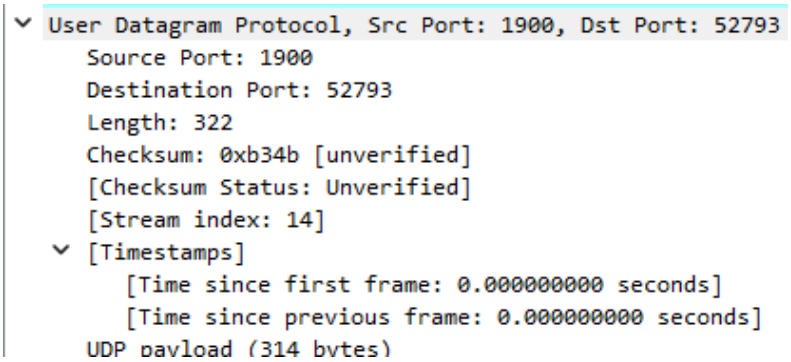
User Daragram Protocol

Puerto de origen: 1900

Puerto de destino: 52793

Longitud: 322

Suma de control: Inconfirmado



Simple Service Discovery Protocol

Versión: HTTP/1.1

Código de estado: 200

Control de Caché: max-age= 1900\r\n

Localización: http://192.168.0.1:80

Servidor: UPnP/1.0UPnP-Device-Host/1.0\r\n

ST:urn:schemas-upnp-org:device:InternetGatewayDevice:1\r\n

EXT:\r\n

- LLDP

En este caso nosotros vamos a elegir el número 49 donde vamos a explicar posteriormente sus capas:

45	1.012357	192.168.0.15	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
46	1.012776	fe80::f870:921a:850…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
47	1.013155	fe80::f870:921a:850…	ff02::fb	MDNS	102	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
48	1.830233	Sagemcom_8c:0d:f4	IEEE-1905.1-Control	ieee19…	60	Topology discovery
49	1.830233	Sagemcom_8c:0d:f4	LLDP_Multicast	LLDP	60	MA/34:49:5b:8c:0d:f4 MA/34:4d:5b:8c:0d:f4 180
50	1.889405	192.168.0.1	239.255.255.250	SSDP	342	NOTIFY * HTTP/1.1
51	1.889563	192.168.0.1	239.255.255.250	SSDP	398	NOTIFY * HTTP/1.1
52	1.889625	192.168.0.1	239.255.255.250	SSDP	326	NOTIFY * HTTP/1.1

Nos encontramos con que tiene 3 capas:

```
> Frame 49: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id 0
> Ethernet II, Src: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4), Dst: LLDP_Multicast (01:80:c2:00:00:0e)
> Link Layer Discovery Protocol
```

```
0000  01 80 c2 00 00 0e 34 49  5b 8c 0d f4 88 cc 02 07   ·····4I [······ 
0010  04 34 49 5b 8c 0d f4 04  07 03 34 4d 5b 8c 0d f4   ·4I[···· ··4M[··· 
0020  06 02 00 b4 00 00 a8 c6  9e 22 a1 6f 83 52 8f bb   ········ ·"·o·R·· 
0030  d2 b5 44 d5 c5 7b 14 4d  02 78 42 c3               ··D··{·M ·xB·
```

Frame15: 82 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:13

Número de cuadro: 49

Longitud de cuadro: 60bytes (480 bits)

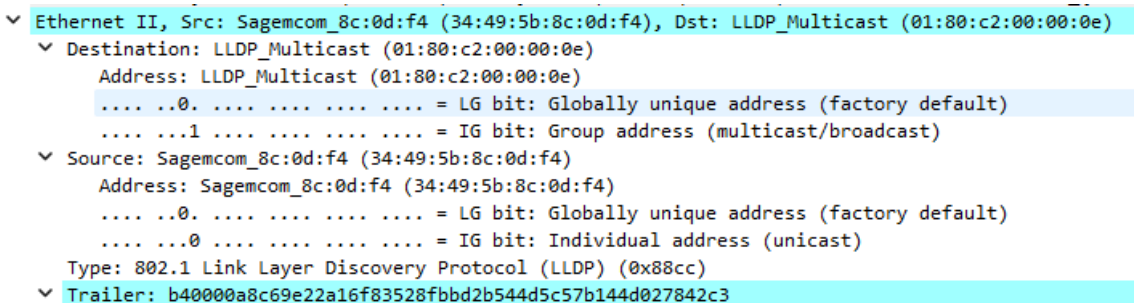
```
v Frame 49: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id 0
  > Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
    Encapsulation type: Ethernet (1)
    Arrival Time: Mar 11, 2022 21:17:13.871283000 Hora estándar romance
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1647029833.871283000 seconds
    [Time delta from previous captured frame: 0.000000000 seconds]
    [Time delta from previous displayed frame: 0.000000000 seconds]
    [Time since reference or first frame: 1.830233000 seconds]
    Frame Number: 49
    Frame Length: 60 bytes (480 bits)
    Capture Length: 60 bytes (480 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:lldp]
    [Coloring Rule Name: Broadcast]
    [Coloring Rule String: eth[0] & 1]
```

Ethernet II

Destinación: LLDP_Multicast(01:80:c2:00:00:0e)

Fuente: Sagmecom_8c:0d:f4

Tipo: 802.1(LLDP)(0x88cc)

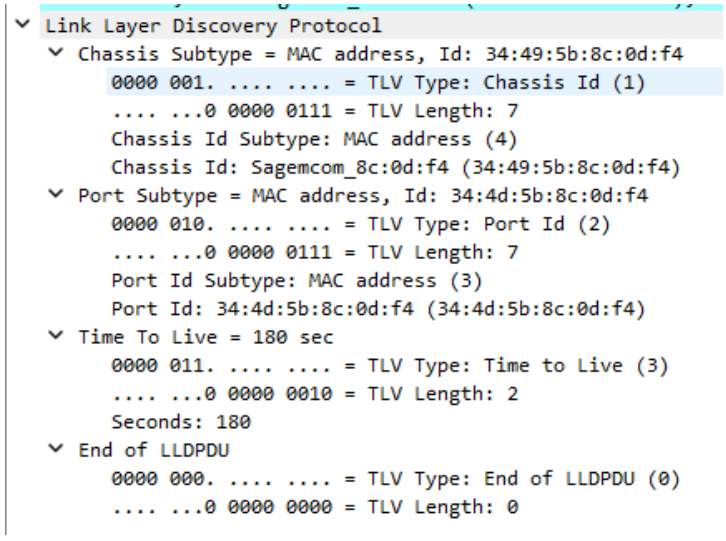


Link Layer Discovery Protocol

Subtipo de Chasis: MAC address, Id: 34:49:5b:8c:0d:f4

Subtipo de puertos: MAC address, Id: 34:4d:5b:8c:0d:f4

Tiempo activo: 180 segundos

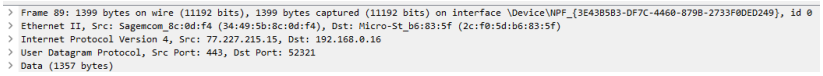


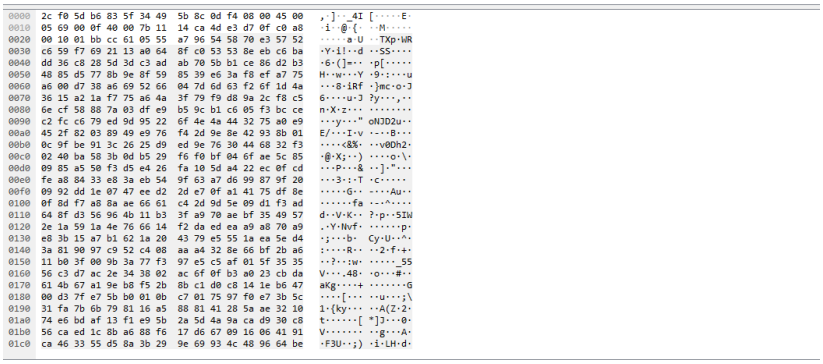
- UDP

En este caso nosotros vamos a elegir el número 89 donde vamos a explicar posteriormente sus capas:

86	2.641925	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357
87	2.641990	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357
88	2.641990	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357
89	2.641990	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357
90	2.641990	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357
91	2.641990	77.227.215.15	192.168.0.16	UDP	1399 443 → 52321 Len=1357

Nos encontramos con que tiene 5 capas:





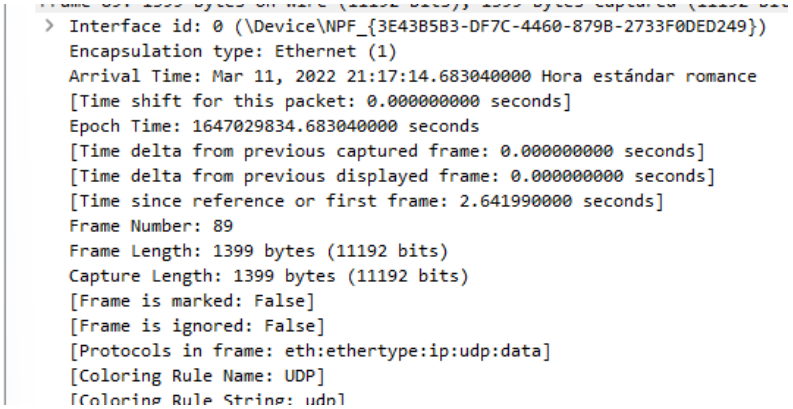
Frame89: 1399 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:14

Número de cuadro: 89

Longitud de cuadro: 1399bytes(11192bits)

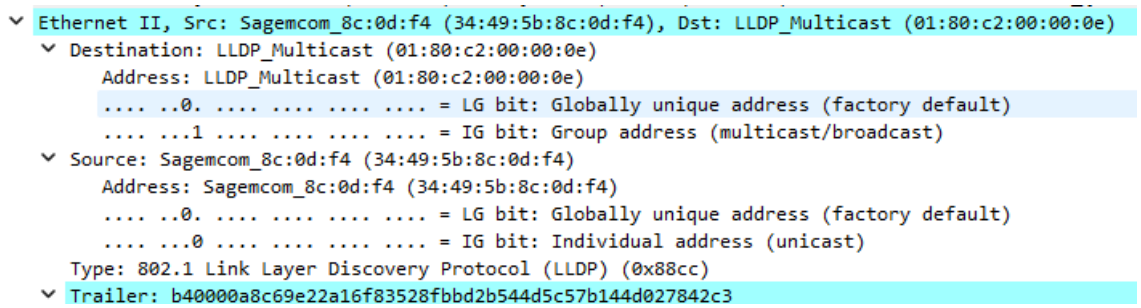


Ethernet II

Destinación: Micro-St_b6:83:5f

Fuente Micro-St_b6:83:5f

Tipo: IPv4 (0x0800)



Internet Protocol Versión 4

Versión :4

Identificación: 0xcec2 (52930)

Longitud de cuadro: 342

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.1

Dirección de destino: 192.168.0.16

```
Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.16
   0100 .... = Version: 4
   .... 0101 = Header Length: 20 bytes (5)
   Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0
   Total Length: 342
   Identification: 0xdead (57005)
   Flags: 0x00
      0... .... = Reserved bit: Not set
      .0.. .... = Don't fragment: Not set
      ..0. .... = More fragments: Not set
   ...0 0000 0000 0000 = Fragment Offset: 0
   Time to Live: 4
      [Expert Info (Note/Sequence): "Time To Live" only 4]
   Protocol: UDP (17)
   Header Checksum: 0x5588 [validation disabled]
   [Header checksum status: Unverified]
   Source Address: 192.168.0.1
   Destination Address: 192.168.0.16
```

User Daragram Protocol

Puerto de origen: 52574

Puerto de destino: 53

Longitud: 45

Suma de control: Inconfirmado

```
User Datagram Protocol, Src Port: 52574, Dst Port: 53
   Source Port: 52574
   Destination Port: 53
   Length: 45
   Checksum: 0x67ee [unverified]
   [Checksum Status: Unverified]
   [Stream index: 30]
   [Timestamps]
      [Time since first frame: 0.000000000 seconds]
      [Time since previous frame: 0.000000000 seconds]
   UDP payload (37 bytes)
```

Domain Name System

ID de la transición: 0x9d1f

Queries: campusonline.ifp.es: type A, class IN

```
Domain Name System (query)
    Transaction ID: 0x9d1f
  Flags: 0x0100 Standard query
      0... .... .... .... = Response: Message is a query
      .000 0... .... .... = Opcode: Standard query (0)
      .... ..0. .... .... = Truncated: Message is not truncated
      .... ...1 .... .... = Recursion desired: Do query recursively
      .... .... .0.. .... = Z: reserved (0)
      .... .... ...0 .... = Non-authenticated data: Unacceptable
    Questions: 1
    Answer RRs: 0
    Authority RRs: 0
    Additional RRs: 0
  Queries
    > campusonline.ifp.es: type A, class IN
    [Response In: 2223]
```

- DNS

En este caso nosotros vamos a elegir el número 2221 donde vamos a explicar posteriormente sus capas:

2219	8.203527	192.168.0.16	212.166.210.80	DNS	91	Standard query 0x6cf7 A learn.content.blackboardcdn.com
2220	8.203527	192.168.0.16	212.166.210.80	DNS	81	Standard query 0x6d31 A js-agent.newrelic.com
2221	8.203550	192.168.0.16	212.166.210.80	DNS	79	Standard query 0x9d1f A campusonline.ifp.es
2222	8.214897	212.166.210.80	192.168.0.16	DNS	134	Standard query response 0x6d31 A js-agent.newrelic.com CNAME k.sni.

Nos encontramos con que tiene 3 capas:

```
> Frame 2221: 79 bytes on wire (632 bits), 79 bytes captured (632 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id
> Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
> Internet Protocol Version 4, Src: 192.168.0.16, Dst: 212.166.210.80
> User Datagram Protocol, Src Port: 52574, Dst Port: 53
> Domain Name System (query)
```

```
0000  34 49 5b 8c 0d f4 2c f0  5d b6 83 5f 08 00 45 00   4I[···,· ]··_··E·
0010  00 41 ce c2 00 00 80 11  00 00 c0 a8 00 10 d4 a6   ·A·····  ········
0020  d2 50 cd 5e 00 35 00 2d  67 ee 9d 1f 01 00 00 01   ·P·^·5·- g·······
0030  00 00 00 00 00 00 0c 63  61 6d 70 75 73 6f 6e 6c   ·······c ampusonl
0040  69 6e 65 03 69 66 70 02  65 73 00 00 01 00 01      ine·ifp· es·····
```

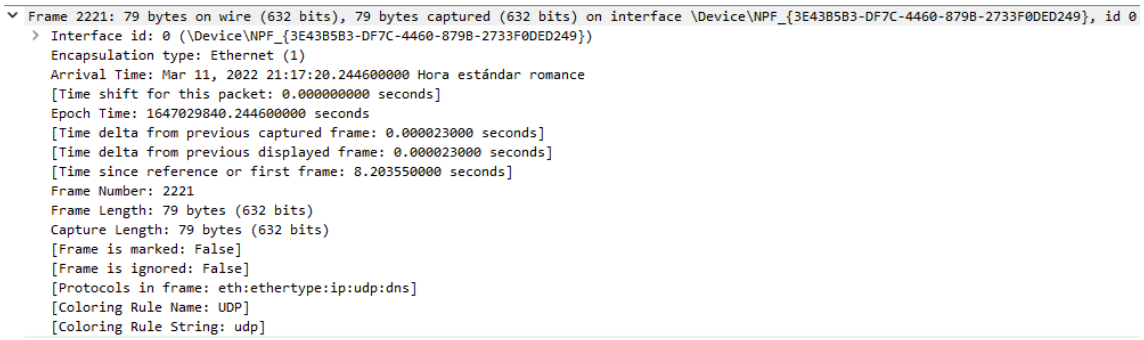
Frame2221: 79 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:20

Número de cuadro: 221

Longitud de cuadro: 79bytes (632 bits)

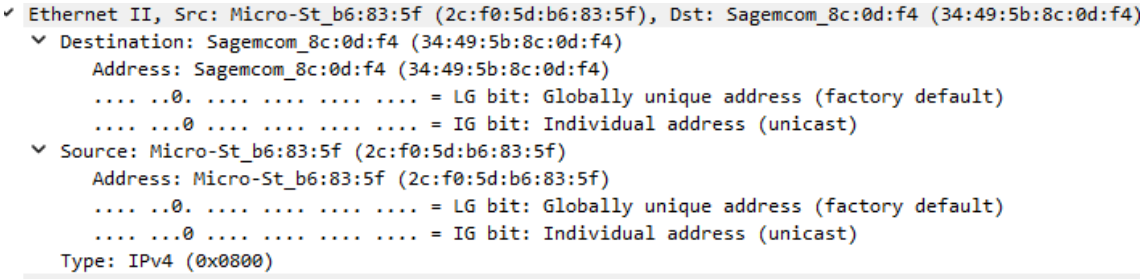


Ethernet II

Destinación: Sagemcom_8c:0d: f4

Fuente: Micro-St_b6:83:5f

Tipo: IPv4 (0x0800)



Internet Protocol Versión 4

Versión :4

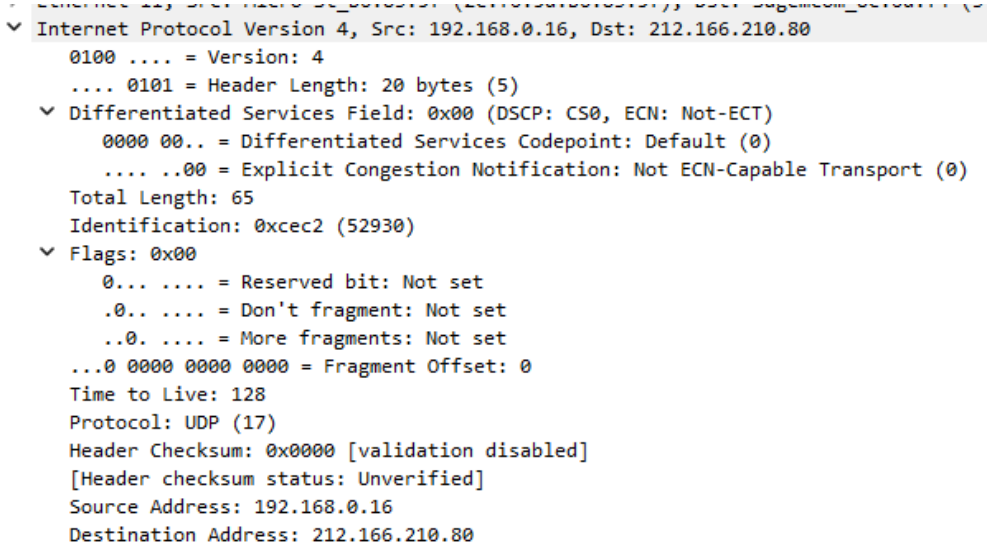
Identificación: 0xcec2(52930)

Longitud de cuadro: 65

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 212.166.210.80



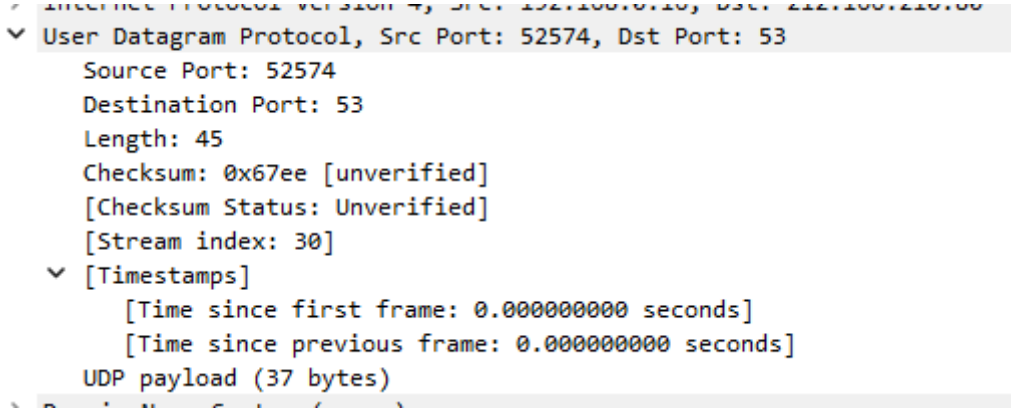
User Datagram Protocol

Puerto de origen:52574

Puerto de destino: 53

Longitud:45

Suma de control 0x67ee Incorfimado



Domain Name System

ID de la transición: 0x9d1f

Queries: campusonline.ifp.es: type A, class IN

```
▾ Domain Name System (query)
    Transaction ID: 0x9d1f
  ▾ Flags: 0x0100 Standard query
      0... .... .... .... = Response: Message is a query
      .000 0... .... .... = Opcode: Standard query (0)
      .... ..0. .... .... = Truncated: Message is not truncated
      .... ...1 .... .... = Recursion desired: Do query recursively
      .... .... .0.. .... = Z: reserved (0)
      .... .... ...0 .... = Non-authenticated data: Unacceptable
    Questions: 1
    Answer RRs: 0
    Authority RRs: 0
    Additional RRs: 0
  ▾ Queries
    › campusonline.ifp.es: type A, class IN
    [Response In: 2223]
```

- TLSV.2

En este caso nosotros vamos a elegir el número 2249 donde vamos a explicar posteriormente sus capas:

2240	8.252731	192.168.0.16	18.158.76.148	TLSv1.2	571 Client Hello
2242	8.285577	18.158.76.148	192.168.0.16	TLSv1.2	1514 Server Hello
2248	8.287156	18.158.76.148	192.168.0.16	TLSv1.2	677 Certificate, Server Key Exchange, Server Hello Done
2249	8.290044	192.168.0.16	18.158.76.148	TLSv1.2	180 Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message
2250	8.321432	18.158.76.148	192.168.0.16	TLSv1.2	105 Change Cipher Spec, Encrypted Handshake Message
2251	8.321667	192.168.0.16	18.158.76.148	TLSv1.2	1012 Application Data
2253	8.359771	18.158.76.148	192.168.0.16	TLSv1.2	81 Application Data

Nos encontramos con que tiene 5 capas:

```
› Frame 2249: 180 bytes on wire (1440 bits), 180 bytes captured (1440 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id 0
› Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
› Internet Protocol Version 4, Src: 192.168.0.16, Dst: 18.158.76.148
› Transmission Control Protocol, Src Port: 61028, Dst Port: 443, Seq: 518, Ack: 6180, Len: 126
› Transport Layer Security
```

```
0000  34 49 5b 8c 0d f4 2c f0  5d b6 83 5f 08 00 45 00   4I[···,· ]··_··E·
0010  00 a6 ce bf 40 00 80 06  00 00 c0 a8 00 10 12 9e   ····@··· ········
0020  4c 94 ee 64 01 bb 3b ef  7a f2 7b 3c 49 f5 50 18   L··d··;· z·{<I·P·
0030  04 00 20 83 00 00 16 03  03 00 46 10 00 00 42 41   ·· ····· ··F···BA
0040  04 98 eb 6b 33 67 45 6d  c0 7a 22 2a 39 04 8d 5f   ···k3gEm ·z"*9··_
0050  0f 47 a4 b4 12 1e 49 40  e5 89 d1 3f a4 83 97 ed   ·G····I@ ···?····
0060  59 8a 8c 08 9f f7 54 6b  43 41 68 8d 5e 52 b7 8a   Y·····Tk CAh·^R··
0070  0c c2 db 58 00 6c 83 6d  f3 81 85 f3 05 c8 95 5f   ···X·l·m ·······_
0080  e5 14 03 03 00 01 01 16  03 03 00 28 00 00 00 00   ········ ···(····
0090  00 00 00 00 68 f3 d9 87  4c cb 75 26 97 b4 14 32   ····h··· L·u&···2
00a0  b0 93 73 19 69 cc 1a 5f  90 1f 63 f7 67 a9 8c 4d   ··s·i··_ ··c·g··M
00b0  67 91 e1 6c                                       g··l
```

Edison Gabriel Vaca Cifuentes

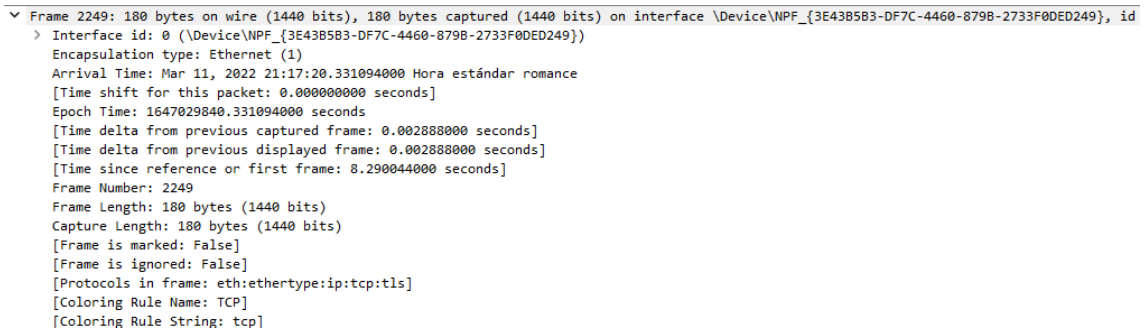
Frame2249: 180 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:20

Número de cuadro: 2249

Longitud de cuadro: 180bytes (1440 bits)

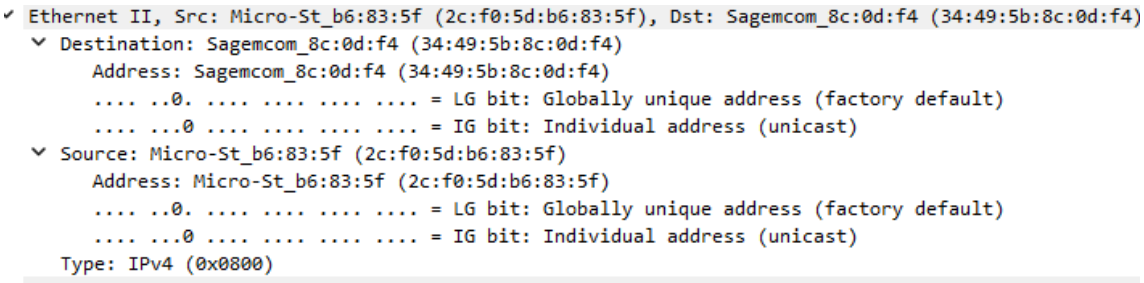


Ethernet II

Destinación: Sagemcom_8c:0d: f4

Fuente: Micro-St_b6:83:5f

Tipo: IPv4 (0x0800)



Internet Protocol Versión 4

Versión :4

Identificación: 0xcec2(52927)

Longitud de cuadro: 166

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 212.166.76.148

```
Internet Protocol Version 4, Src: 192.168.0.16, Dst: 18.158.76.148
   0100 .... = Version: 4
   .... 0101 = Header Length: 20 bytes (5)
   Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
   Total Length: 166
   Identification: 0xcebf (52927)
   Flags: 0x40, Don't fragment
      0... .... = Reserved bit: Not set
      .1.. .... = Don't fragment: Set
      ..0. .... = More fragments: Not set
   ...0 0000 0000 0000 = Fragment Offset: 0
   Time to Live: 128
   Protocol: TCP (6)
   Header Checksum: 0x0000 [validation disabled]
   [Header checksum status: Unverified]
   Source Address: 192.168.0.16
   Destination Address: 18.158.76.148
```

Transmission Control Protocol:

Puerto de Origen:61028

Puerto de destino: 443

Secuencia de números: 518

Window 1024

Calculo de tamaño de Window:262144

Suma de control: 0x2083

Factor de escala del tamaño de Windows:256

```
Transmission Control Protocol, Src Port: 61028, Dst Port: 443, Seq: 518, Ack: 6180, Len: 126
   Source Port: 61028
   Destination Port: 443
   [Stream index: 0]
   [Conversation completeness: Complete, WITH_DATA (63)]
   [TCP Segment Len: 126]
   Sequence Number: 518    (relative sequence number)
   Sequence Number (raw): 1005550322
   [Next Sequence Number: 644    (relative sequence number)]
   Acknowledgment Number: 6180    (relative ack number)
   Acknowledgment number (raw): 2067548661
   0101 .... = Header Length: 20 bytes (5)
   Flags: 0x018 (PSH, ACK)
   Window: 1024
   [Calculated window size: 262144]
   [Window size scaling factor: 256]
   Checksum: 0x2083 [unverified]
   [Checksum Status: Unverified]
   Urgent Pointer: 0
   [Timestamps]
   [SEQ/ACK analysis]
   TCP payload (126 bytes)
```

Transport Layer Security:

Tipo de Contenido: Handshake (22)

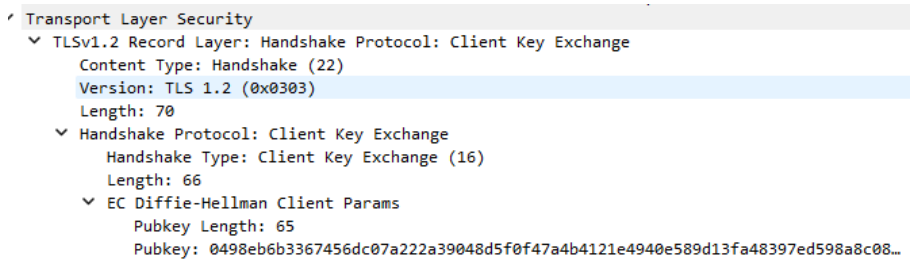
Versión: TLS 1.2 (0X0303)

Longitud: 70

Ec Diffie-Hellam Client Params:

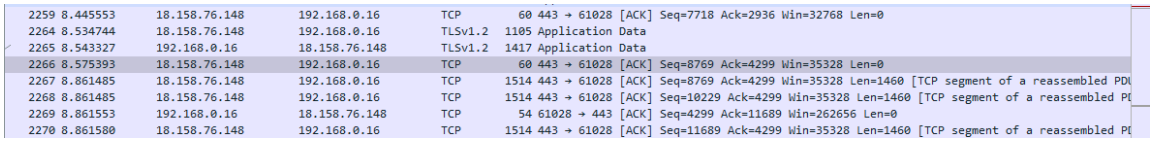
Longitud de Pubkey : 65

Pubkey:0498eb6b3367456dc07a222a39048d5f0f47a4b4121e4940e589d13fa48397ed598a8c08…

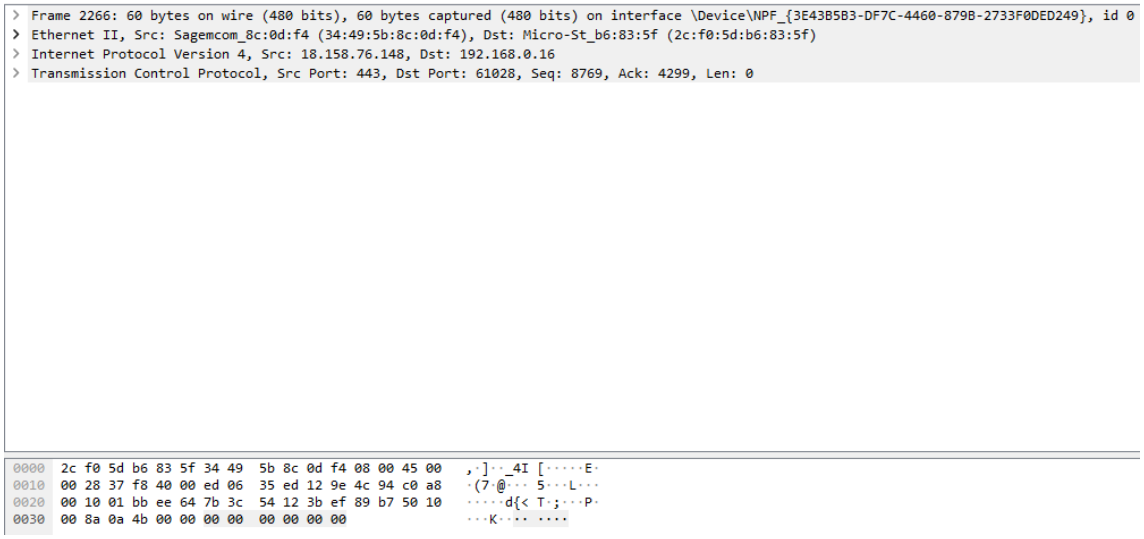


- TCP

En este caso nosotros vamos a elegir el número 2266 donde vamos a explicar posteriormente sus capas:



Nos encontramos con que tiene 5 capas:



Frame2260: 60 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:20

Número de cuadro: 2266

Longitud de cuadro: 60bytes (480 bits)

```
Frame 2249: 180 bytes on wire (1440 bits), 180 bytes captured (1440 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id
  Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
  Encapsulation type: Ethernet (1)
  Arrival Time: Mar 11, 2022 21:17:20.331094000 Hora estándar romance
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1647029840.331094000 seconds
  [Time delta from previous captured frame: 0.002888000 seconds]
  [Time delta from previous displayed frame: 0.002888000 seconds]
  [Time since reference or first frame: 8.290044000 seconds]
  Frame Number: 2249
  Frame Length: 180 bytes (1440 bits)
  Capture Length: 180 bytes (1440 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:tcp:tls]
  [Coloring Rule Name: TCP]
  [Coloring Rule String: tcp]
```

Ethernet II

Destinación: Micro-St_b6:83:5f

Fuente: Micro-St_b6:83:5f

Tipo: IPv4 (0x0800)

```
Ethernet II, Src: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4), Dst: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
  Destination: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      Address: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
  Source: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      Address: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
    Padding: 000000000000
```

Internet Protocol Versión 4

Versión: 4

Identificación: 0x37F8(14328)

Longitud de cuadro: 40

Protocolo: UDP (6)

Dirección de la fuente: 18.158.76.148

Dirección de destino: 192.168.0.16

```
Internet Protocol Version 4, Src: 18.158.76.148, Dst: 192.168.0.16
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
    Total Length: 40
    Identification: 0x37f8 (14328)
  Flags: 0x40, Don't fragment
      0... .... = Reserved bit: Not set
      .1.. .... = Don't fragment: Set
      ..0. .... = More fragments: Not set
    ...0 0000 0000 0000 = Fragment Offset: 0
    Time to Live: 237
    Protocol: TCP (6)
    Header Checksum: 0x35ed [validation disabled]
    [Header checksum status: Unverified]
    Source Address: 18.158.76.148
    Destination Address: 192.168.0.16
```

Transmission Control Protocol:

Puerto de Origen:61028

Puerto de destino: 443

Secuencia de números: 518

Window 1024

Calculo de tamaño de Window:262144

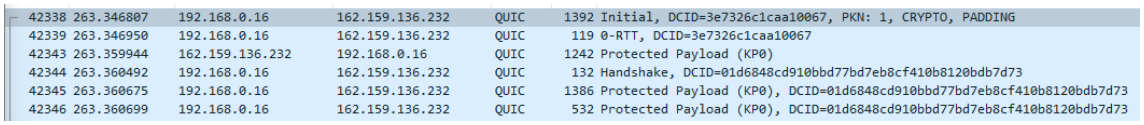
Suma de control: 0x2083

Factor de escala del tamaño de Windows:256

```
Transmission Control Protocol, Src Port: 61028, Dst Port: 443, Seq: 518, Ack: 6180, Len: 126
    Source Port: 61028
    Destination Port: 443
    [Stream index: 0]
    [Conversation completeness: Complete, WITH_DATA (63)]
    [TCP Segment Len: 126]
    Sequence Number: 518    (relative sequence number)
    Sequence Number (raw): 1005550322
    [Next Sequence Number: 644    (relative sequence number)]
    Acknowledgment Number: 6180    (relative ack number)
    Acknowledgment number (raw): 2067548661
    0101 .... = Header Length: 20 bytes (5)
  > Flags: 0x018 (PSH, ACK)
    Window: 1024
    [Calculated window size: 262144]
    [Window size scaling factor: 256]
    Checksum: 0x2083 [unverified]
    [Checksum Status: Unverified]
    Urgent Pointer: 0
  > [Timestamps]
  > [SEQ/ACK analysis]
    TCP payload (126 bytes)
```

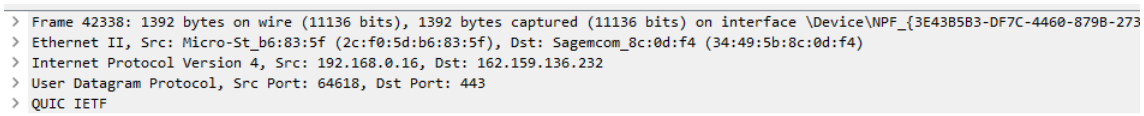
- QUIC

En este caso nosotros vamos a elegir el número 42338 donde vamos a explicar posteriormente sus capas:

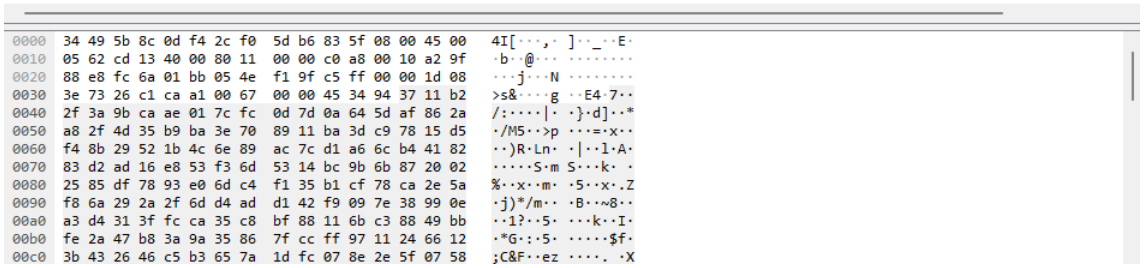


42338	263.346807	192.168.0.16	162.159.136.232	QUIC	1392	Initial, DCID=3e7326c1caa10067, PKN: 1, CRYPTO, PADDING
42339	263.346950	192.168.0.16	162.159.136.232	QUIC	119	0-RTT, DCID=3e7326c1caa10067
42343	263.359944	162.159.136.232	192.168.0.16	QUIC	1242	Protected Payload (KP0)
42344	263.360492	192.168.0.16	162.159.136.232	QUIC	132	Handshake, DCID=01d6848cd910bbd77bd7eb8cf410b8120bdb7d73
42345	263.360675	192.168.0.16	162.159.136.232	QUIC	1386	Protected Payload (KP0), DCID=01d6848cd910bbd77bd7eb8cf410b8120bdb7d73
42346	263.360699	192.168.0.16	162.159.136.232	QUIC	532	Protected Payload (KP0), DCID=01d6848cd910bbd77bd7eb8cf410b8120bdb7d73

Nos encontramos con que tiene 5 capas:



```
> Frame 42338: 1392 bytes on wire (11136 bits), 1392 bytes captured (11136 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-273
> Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
> Internet Protocol Version 4, Src: 192.168.0.16, Dst: 162.159.136.232
> User Datagram Protocol, Src Port: 64618, Dst Port: 443
> QUIC IETF
```



```
0000  34 49 5b 8c 0d f4 2c f0  5d b6 83 5f 08 00 45 00   4I[···,· ]··_··E·
0010  05 62 cd 13 40 00 80 11  00 00 c0 a8 00 10 a2 9f   ·b··@··· ········
0020  88 e8 fc 6a 01 bb 05 4e  f1 9f c5 ff 00 00 1d 08   ···j···N ········
0030  3e 73 26 c1 ca a1 00 67  00 00 45 34 94 37 11 b2   >s&····g ··E4·7··
0040  2f 3a 9b ca ae 01 7c fc  0d 7d 0a 64 5d af 86 2a   /:····|· ·}·d]··*
0050  a8 2f 4d 35 b9 ba 3e 70  89 11 ba 3d c9 78 15 d5   ·/M5··>p ···=·x··
0060  f4 8b 29 52 1b 4c 6e 89  ac 7c d1 a6 6c b4 41 82   ··)R·Ln· ·|··l·A·
0070  83 d2 ad 16 e8 53 f3 6d  53 14 bc 9b 6b 87 20 02   ·····S·m S···k· ·
0080  25 85 df 78 93 e0 6d c4  f1 35 b1 cf 78 ca 2e 5a   %··x··m· ·5··x··Z
0090  f8 6a 29 2a 2f 6d d4 ad  d1 42 f9 09 7e 38 99 0e   ·j)*/m·· ·B··~8··
00a0  a3 d4 31 3f fc ca 35 c8  bf 88 11 6b c3 88 49 bb   ··1?··5· ···k··I·
00b0  fe 2a 47 b8 3a 9a 35 86  7f cc ff 97 11 24 66 12   ·*G·:·5· ·····$f·
00c0  3b 43 26 46 c5 b3 65 7a  1d fc 07 8e 2e 5f 07 58   ;C&F··ez ·····. ·X
```

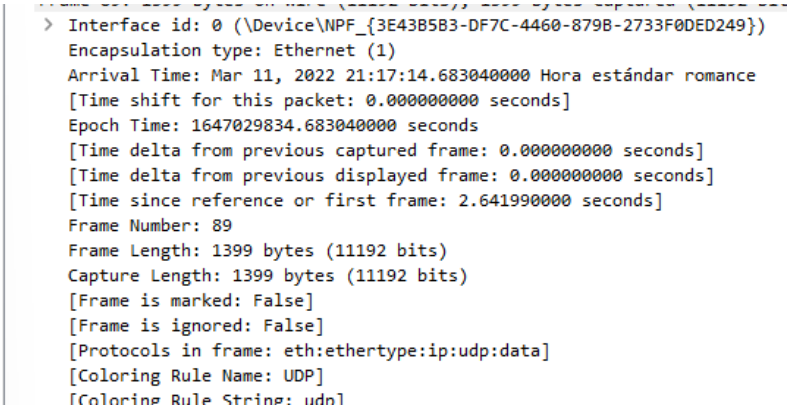
Frame42338: 13923 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:14

Número de cuadro: 42338

Longitud de cuadro: 1392bytes(11136bits)



```
> Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
  Encapsulation type: Ethernet (1)
  Arrival Time: Mar 11, 2022 21:17:14.683040000 Hora estándar romance
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1647029834.683040000 seconds
  [Time delta from previous captured frame: 0.000000000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 2.641990000 seconds]
  Frame Number: 89
  Frame Length: 1399 bytes (11192 bits)
  Capture Length: 1399 bytes (11192 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:udp:data]
  [Coloring Rule Name: UDP]
  [Coloring Rule String: udp]
```

Ethernet II

Destinación: Micro-St_b6:0d:f4

Fuente Micro-St_b6:0d:f4

Tipo: IPv4 (0x0800)

```
Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4
  Destination: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
       Address: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
       .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
       .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
  Source: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
       Address: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
       .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
       .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
```

Internet Protocol Versión 4

Versión :4

Identificación: 0xcec13 (52499)

Longitud de cuadro: 1378

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 192.159.136.232

```
Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.16
   0100 .... = Version: 4
   .... 0101 = Header Length: 20 bytes (5)
   Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0
   Total Length: 342
   Identification: 0xdead (57005)
   Flags: 0x00
      0... .... = Reserved bit: Not set
      .0.. .... = Don't fragment: Not set
      ..0. .... = More fragments: Not set
   ...0 0000 0000 0000 = Fragment Offset: 0
   Time to Live: 4
      [Expert Info (Note/Sequence): "Time To Live" only 4]
   Protocol: UDP (17)
   Header Checksum: 0x5588 [validation disabled]
   [Header checksum status: Unverified]
   Source Address: 192.168.0.1
   Destination Address: 192.168.0.16
```

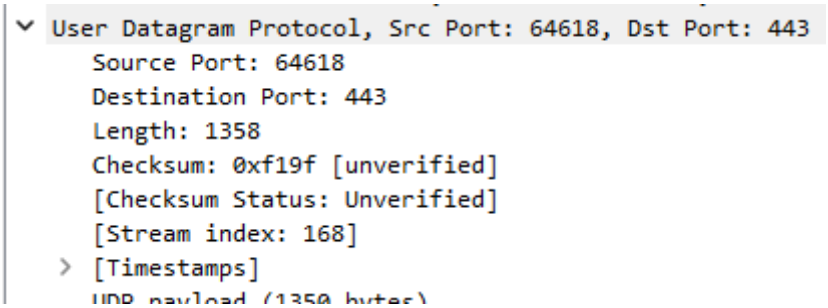
User Daragram Protocole

Puerto de origen: 64618

Puerto de destino: 443

Longitud: 1358

Suma de control: 0xf194 Inconfirmado



QUIC IETF

Longitud de paquete :1350

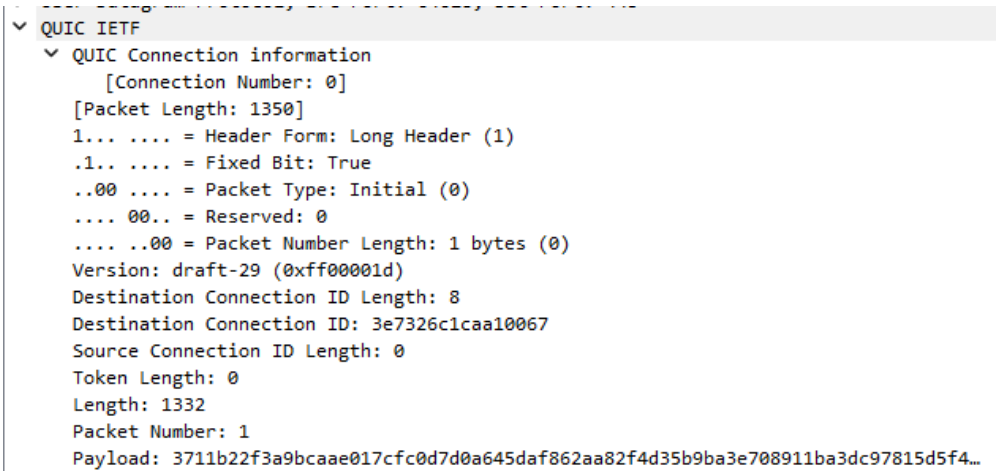
Versión: draft-29

Conexión de Id de longitud de destino: 8

Conexión de Id de destino 3e7326c1caa10067

Número de paquetes :1

Payload:3711b22f3a9bcaae017cfc0d7d0a645daf862aa82f4d35b9ba3e708911ba3dc97815d5f4
…



- ARP

En este caso nosotros vamos a elegir el número 47604 donde vamos a explicar posteriormente sus capas:

24771	195.452662	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
32582	225.584855	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
40600	255.708063	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
47604	285.793199	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
55524	315.877950	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
63378	346.027598	HuaweiTe_1d:58:6e	Broadcast	ARP	60 Who has 192.168.0.1? Tell 192.168.0.13
69232	370.214793	Sagemcom_8c:0d:f4	Broadcast	ARP	60 Who has 172.31.255.40? Tell 192.168.0.1
69604	372.211210	Sagemcom_8c:0d:f4	Broadcast	ARP	60 Who has 172.31.255.45? Tell 192.168.0.1

Nos encontramos con que tiene 3 capas:

```
> Frame 47604: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED2
> Ethernet II, Src: HuaweiTe_1d:58:6e (34:12:f9:1d:58:6e), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
> Address Resolution Protocol (request)
```

Frame42338: 13923 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 21:17:14

Número de cuadro: 89

Longitud de cuadro: 1399bytes(11192bits)

```
> Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
  Encapsulation type: Ethernet (1)
  Arrival Time: Mar 11, 2022 21:17:14.683040000 Hora estándar romance
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1647029834.683040000 seconds
  [Time delta from previous captured frame: 0.000000000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 2.641990000 seconds]
  Frame Number: 89
  Frame Length: 1399 bytes (11192 bits)
  Capture Length: 1399 bytes (11192 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:udp:data]
  [Coloring Rule Name: UDP]
  [Coloring Rule String: udp]
```

Ethernet II

Destinación: Micro-St_b6:0d:5f

Fuente Micro-St_b6:0d:f4

Tipo: IPv4 (0x0800)

```
Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
  Destination: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      Address: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
  Source: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      Address: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
```

Internet Protocol Versión 4

Versión :4

Identificación: 0xcec13 (52499)

Longitud de cuadro: 1378

Protocolo: UDP (17)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 192.159.136.232

```
Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.16
   0100 .... = Version: 4
   .... 0101 = Header Length: 20 bytes (5)
   Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      0000 00.. = Differentiated Services Codepoint: Default (0)
      .... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0
   Total Length: 342
   Identification: 0xdead (57005)
   Flags: 0x00
      0... .... = Reserved bit: Not set
      .0.. .... = Don't fragment: Not set
      ..0. .... = More fragments: Not set
   ...0 0000 0000 0000 = Fragment Offset: 0
   Time to Live: 4
   > [Expert Info (Note/Sequence): "Time To Live" only 4]
   Protocol: UDP (17)
   Header Checksum: 0x5588 [validation disabled]
   [Header checksum status: Unverified]
   Source Address: 192.168.0.1
   Destination Address: 192.168.0.16
```

- IGMP V3

En este caso nosotros vamos a elegir el número 47604 donde vamos a explicar posteriormente sus capas:

```
 36641 240.926689    192.168.0.11        224.0.0.22          IGMPv3     60 Membership Report / Join group 224.0.0.251 for any sources
 47484 285.341168    192.168.0.1         224.0.0.1           IGMPv3     60 Membership Query, general
 47485 285.342698    192.168.5.1         224.0.0.1           IGMPv3     60 Membership Query, general
 47563 285.628064    192.168.0.16        224.0.0.22          IGMPv3     54 Membership Report / Join group 224.0.0.251 for any sources
 47794 286.632254    192.168.0.16        224.0.0.22          IGMPv3     54 Membership Report / Join group 224.0.0.252 for any sources
 48598 290.121374    192.168.0.16        224.0.0.22          IGMPv3     54 Membership Report / Join group 239.255.255.250 for any sources
 48800 290.880946    192.168.0.10        224.0.0.22          IGMPv3     64 Membership Report / Join group 239.255.255.250 for any sources
```

Nos encontramos con que tiene 4 capas:

```
> Frame 47563: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface \Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249}, id 0
> Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: IPv4mcast_16 (01:00:5e:00:00:16)
> Internet Protocol Version 4, Src: 192.168.0.16, Dst: 224.0.0.22
> Internet Group Management Protocol

0000  01 00 5e 00 00 16 2c f0  5d b6 83 5f 08 00 46 00   ··^···,· ]··_··F·
0010  00 28 06 b4 00 00 01 02  00 00 c0 a8 00 10 e0 00   ·(···... ........
0020  00 16 94 04 00 00 22 00  fb 02 00 00 00 01 02 00   ......"· ........
0030  00 00 e0 00 00 fb                                  ......
```

Frame45763:56 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 22:22:05

Número de cuadro: 47563

Longitud de cuadro: 54bytes(11192bits)

```
> Interface id: 0 (\Device\NPF_{3E43B5B3-DF7C-4460-879B-2733F0DED249})
  Encapsulation type: Ethernet (1)
  Arrival Time: Mar 11, 2022 21:17:14.683040000 Hora estándar romance
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1647029834.683040000 seconds
  [Time delta from previous captured frame: 0.000000000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 2.641990000 seconds]
  Frame Number: 89
  Frame Length: 1399 bytes (11192 bits)
  Capture Length: 1399 bytes (11192 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:udp:data]
  [Coloring Rule Name: UDP]
  [Coloring Rule String: udp]
```

Ethernet II

Destinación: IPv4mcast_16

Fuente IPv4mcast_16

Tipo: IPv4 (0x0800)

```
Ethernet II, Src: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f), Dst: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
  Destination: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      Address: Sagemcom_8c:0d:f4 (34:49:5b:8c:0d:f4)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
  Source: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      Address: Micro-St_b6:83:5f (2c:f0:5d:b6:83:5f)
      .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
      .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: IPv4 (0x0800)
```

Internet Protocol Versión 4

Versión :4

Identificación: 0xcec13 (52499)

Longitud de cuadro: 40

Protocolo: IGMP(2)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 224.0.0.22

```
Internet Protocol Version 4, Src: 192.168.0.16, Dst: 224.0.0.22
  0100 .... = Version: 4
  .... 0110 = Header Length: 24 bytes (6)
> Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
  Total Length: 40
  Identification: 0x06b4 (1716)
> Flags: 0x00
  ...0 0000 0000 0000 = Fragment Offset: 0
  Time to Live: 1
  Protocol: IGMP (2)
  Header Checksum: 0x0000 [validation disabled]
  [Header checksum status: Unverified]
  Source Address: 192.168.0.16
  Destination Address: 224.0.0.22
> Options: (4 bytes), Router Alert
```

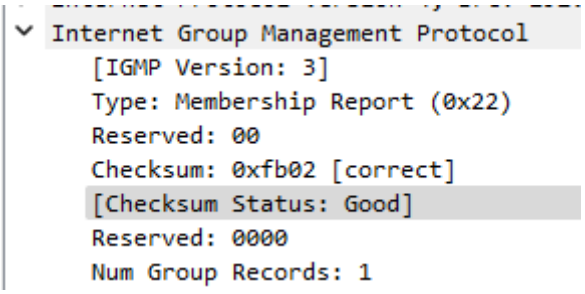
Internet Group Management Protocol

Versión: 3

Tipo: Reporte de Afiliación(0x22)

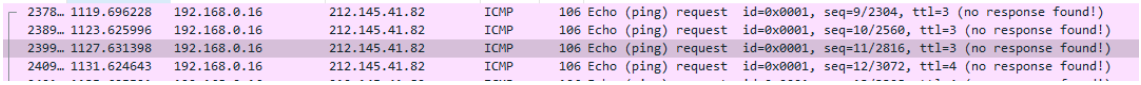
Suma de control: 0xfb02 (correcto)

Estado de Suma de Control: Buena

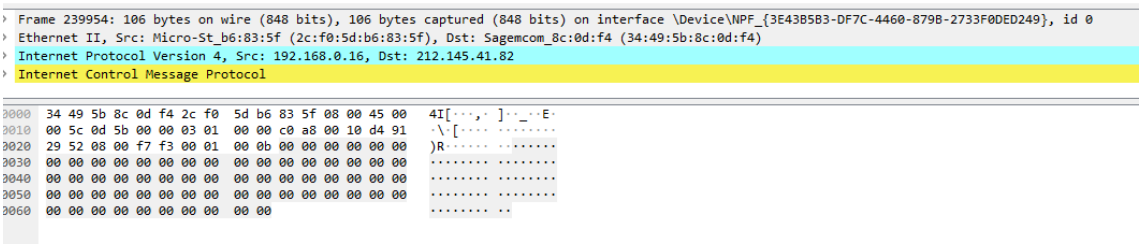


- ICMP

En este caso nosotros vamos a elegir el número 2399 donde vamos a explicar posteriormente sus capas:



Nos encontramos con que tiene 4 capas:



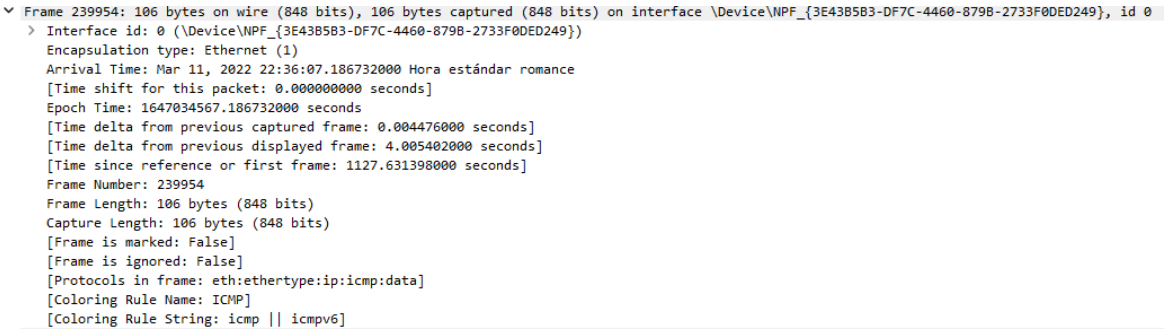
Frame2399:56 bytes on wire

Tipo de encapsulación: Ethernet (1)

Hora de llegada: Mar 11, 2022 22:36:07

Número de cuadro: 239954

Longitud de cuadro: 106bytes (848bits)

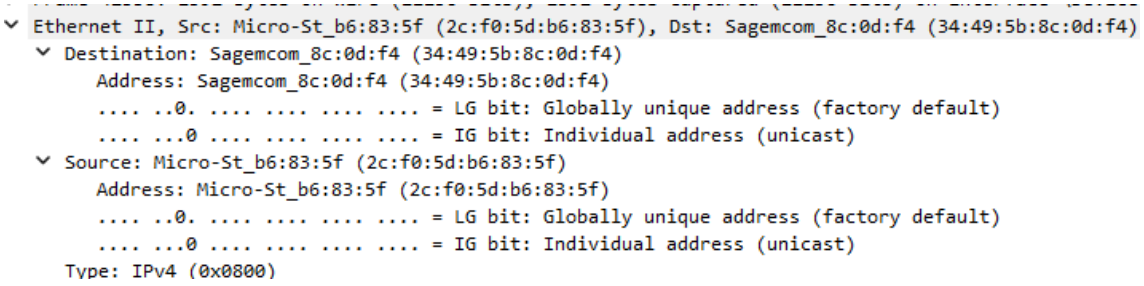


Ethernet II

Destinación: Sagemcom_8c:0d:f4

Fuente Micro-St_b6:83:5f

Tipo: IPv4 (0x0800)



Internet Protocol Versión 4

Versión :4

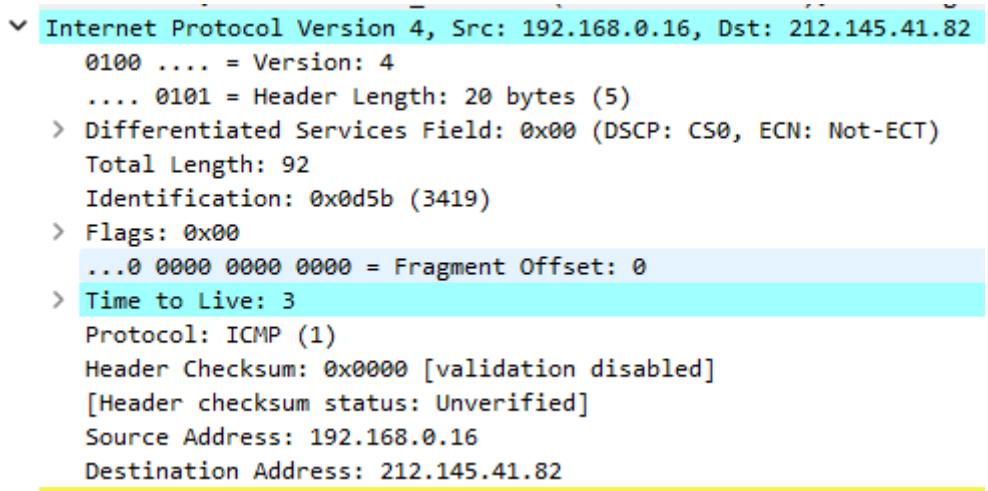
Identificación: 0x0d5b(3419)

Longitud de cuadro: 92

Protocolo: ICMP(1)

Dirección de la fuente: 192.168.0.16

Dirección de destino: 212.145.41.82



Internet Group Management Protocol

Tipo :8

Checksum: 0xf7f3

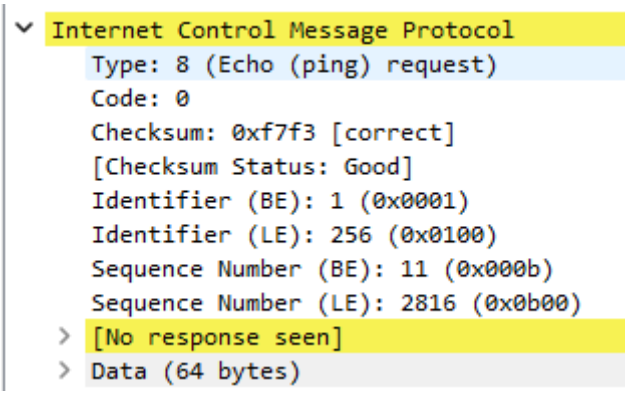
Estado de Checksum: Correcto

Identificador (BE) 1 (0x0001)

Identificador (LE) 1 (0x0100)

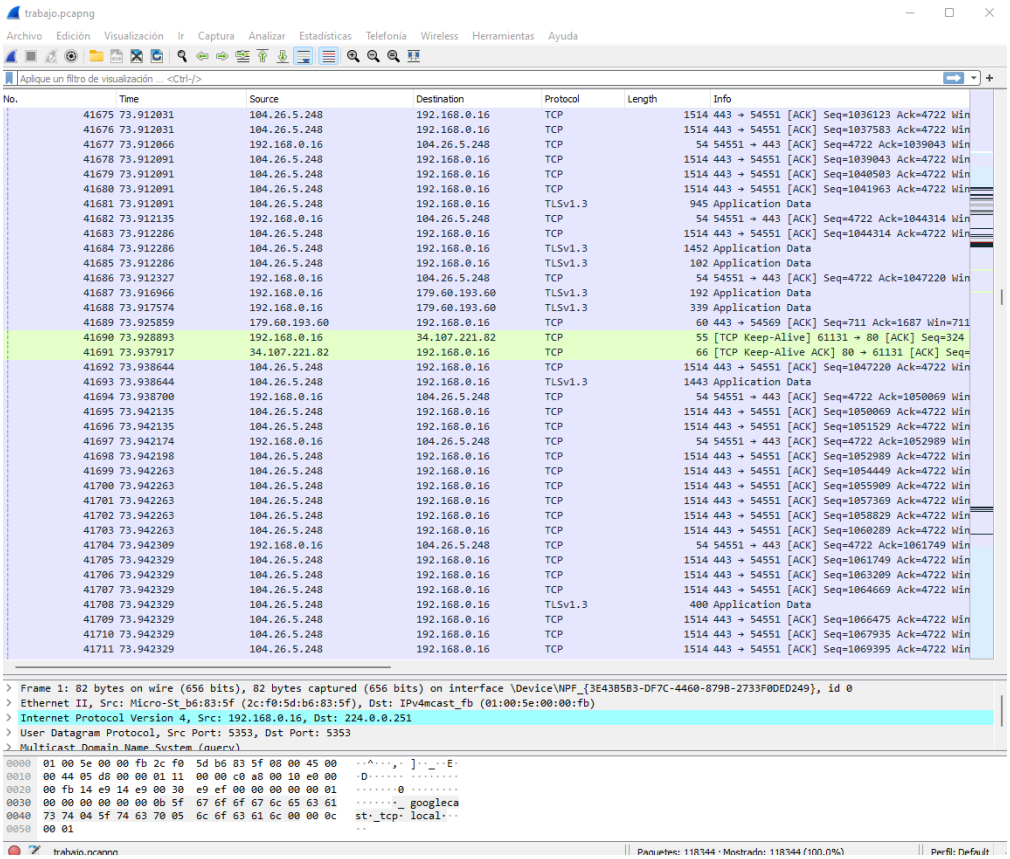
Secuencia de números (BE): 11 (0x000b)

Secuencia de números (LE): 2816 (0x0b00)



Mira como vienen los datos de las páginas que has solicitado:

Al realizar el análisis de nuestra red mediante Ethernet y haber guardado el archivo, nos mostrará la información recogida donde está dividido la información en diferentes secciones.



No. Es el número de frame que ha sido recogida.

Time Es el tiempo en segundos en el que ha sido capturado.

Source La IP de origen que ha sido recogido por el análisis.

Destination La IP de destino que ha sido recogido por el análisis.

Protocol El protocolo que es involucrado.

Length El tamaño del frame que ha sido recogido

Info Por terminar tenemos el campo de información en la que Wireshark a decodificado.

En la parte Intermedia de la ventana podemos encontrar las capas que contiene cada línea, al seleccionarlo.

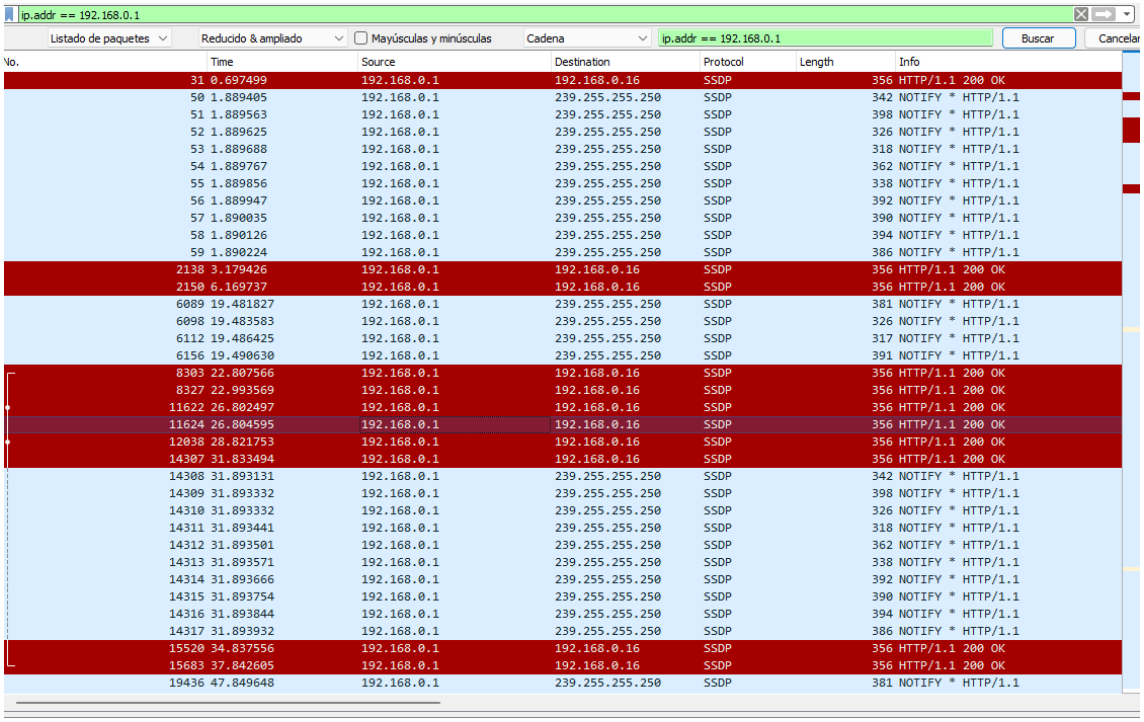
Y en la parte Final de la ventana podemos encontrar contenido/información sobre el protocolo, capas etc pero encriptado.

Realiza filtros con cadenas y con regular expresión:

Cadena:

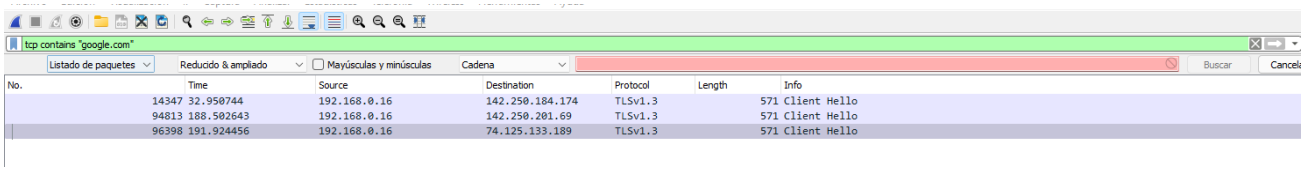
ip.addr == 192.168.0.1

Nos muestra los paquetes de la cadena que en este caso es de al IP 192.168.0.1



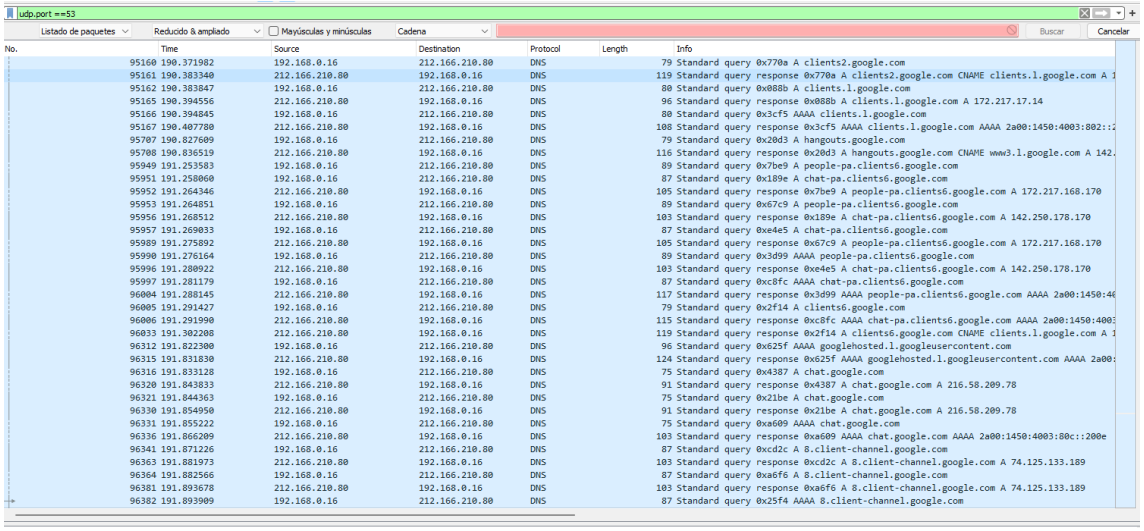
tcp contains "google.com"

Nos ayuda a realizar una búsqueda de segmentos TCP contenido a la cadena Google.com



udp.port == 53

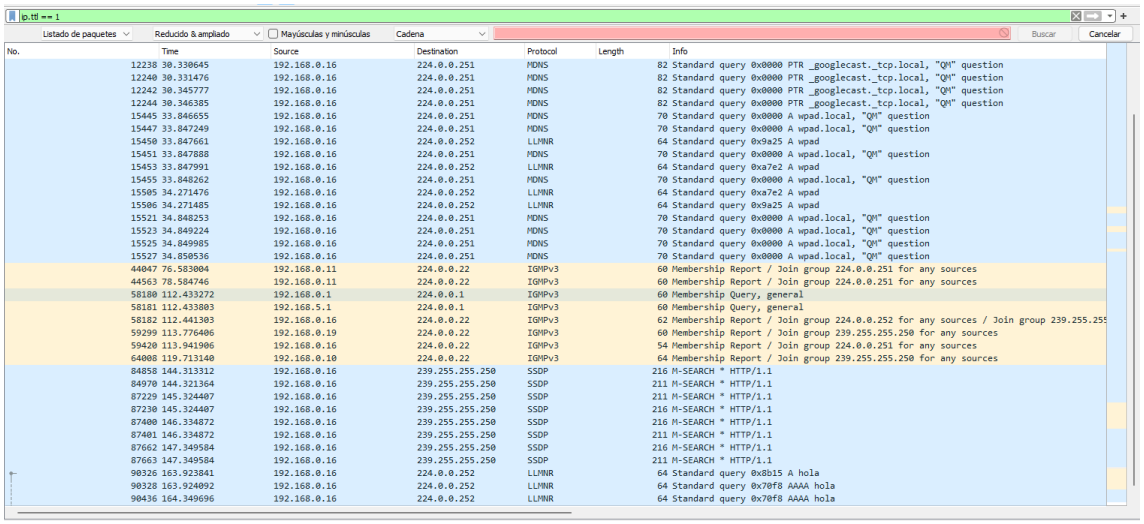
Nos permite visualizar el tráfico UDFP del puerto 53



No.	Time	Source	Destination	Protocol	Length	Info
95160	190.371982	192.168.0.16	212.166.210.80	DNS	79	Standard query 0x770a A clients2.google.com
95161	190.383340	212.166.210.80	192.168.0.16	DNS	119	Standard query response 0x770a A clients2.google.com CNAME clients.l.google.com A 1
95162	190.383847	192.168.0.16	212.166.210.80	DNS	80	Standard query 0x088b A clients.l.google.com
95165	190.394556	212.166.210.80	192.168.0.16	DNS	96	Standard query response 0x088b A clients.l.google.com A 172.217.17.14
95166	190.394845	192.168.0.16	212.166.210.80	DNS	80	Standard query 0x3cf5 AAAA clients.l.google.com
95167	190.407780	212.166.210.80	192.168.0.16	DNS	108	Standard query response 0x3cf5 AAAA clients.l.google.com AAAA 2a00:1450:4003:802::2
95707	190.827609	192.168.0.16	212.166.210.80	DNS	79	Standard query 0x20d3 A hangouts.google.com
95708	190.836519	212.166.210.80	192.168.0.16	DNS	116	Standard query response 0x20d3 A hangouts.google.com CNAME www3.l.google.com A 142.
95949	191.253583	192.168.0.16	212.166.210.80	DNS	89	Standard query 0x7be9 A people-pa.clients6.google.com
95951	191.258060	192.168.0.16	212.166.210.80	DNS	87	Standard query 0x189e A chat-pa.clients6.google.com
95952	191.264346	212.166.210.80	192.168.0.16	DNS	105	Standard query response 0x7be9 A people-pa.clients6.google.com A 172.217.168.170
95953	191.264851	192.168.0.16	212.166.210.80	DNS	89	Standard query 0x67c9 A people-pa.clients6.google.com
95956	191.268512	212.166.210.80	192.168.0.16	DNS	103	Standard query response 0x189e A chat-pa.clients6.google.com A 142.250.178.170
95957	191.269033	192.168.0.16	212.166.210.80	DNS	87	Standard query 0xe4e5 A chat-pa.clients6.google.com
95989	191.275892	212.166.210.80	192.168.0.16	DNS	105	Standard query response 0x67c9 A people-pa.clients6.google.com A 172.217.168.170
95990	191.276164	192.168.0.16	212.166.210.80	DNS	89	Standard query 0x3d99 AAAA people-pa.clients6.google.com
95996	191.280922	212.166.210.80	192.168.0.16	DNS	103	Standard query response 0xe4e5 A chat-pa.clients6.google.com A 142.250.178.170
95997	191.281179	192.168.0.16	212.166.210.80	DNS	87	Standard query 0xc8fc AAAA chat-pa.clients6.google.com
96004	191.288145	212.166.210.80	192.168.0.16	DNS	117	Standard query response 0x3d99 AAAA people-pa.clients6.google.com AAAA 2a00:1450:4
96005	191.291427	192.168.0.16	212.166.210.80	DNS	79	Standard query 0x2f14 A clients6.google.com
96006	191.291990	212.166.210.80	192.168.0.16	DNS	115	Standard query response 0xc8fc AAAA chat-pa.clients6.google.com AAAA 2a00:1450:400
96033	191.302208	212.166.210.80	192.168.0.16	DNS	119	Standard query response 0x2f14 A clients6.google.com CNAME clients.l.google.com A 1
96312	191.822300	192.168.0.16	212.166.210.80	DNS	96	Standard query 0x625f AAAA googlehosted.l.googleusercontent.com
96315	191.831830	212.166.210.80	192.168.0.16	DNS	124	Standard query response 0x625f AAAA googlehosted.l.googleusercontent.com AAAA 2a00:
96316	191.833128	192.168.0.16	212.166.210.80	DNS	75	Standard query 0x4387 A chat.google.com
96320	191.843833	212.166.210.80	192.168.0.16	DNS	91	Standard query response 0x4387 A chat.google.com A 216.58.209.78
96321	191.844363	192.168.0.16	212.166.210.80	DNS	75	Standard query 0x21be A chat.google.com
96330	191.854950	212.166.210.80	192.168.0.16	DNS	91	Standard query response 0x21be A chat.google.com A 216.58.209.78
96331	191.855222	192.168.0.16	212.166.210.80	DNS	75	Standard query 0xa609 AAAA chat.google.com
96336	191.866209	212.166.210.80	192.168.0.16	DNS	103	Standard query response 0xa609 AAAA chat.google.com AAAA 2a00:1450:4003:80c::200e
96341	191.871226	192.168.0.16	212.166.210.80	DNS	87	Standard query 0xcd2c A 8.client-channel.google.com
96363	191.881973	212.166.210.80	192.168.0.16	DNS	103	Standard query response 0xcd2c A 8.client-channel.google.com A 74.125.133.189
96364	191.882566	192.168.0.16	212.166.210.80	DNS	87	Standard query 0xa6f6 A 8.client-channel.google.com
96381	191.893678	212.166.210.80	192.168.0.16	DNS	103	Standard query response 0xa6f6 A 8.client-channel.google.com A 74.125.133.189
96382	191.893909	192.168.0.16	212.166.210.80	DNS	87	Standard query 0x25f4 AAAA 8.client-channel.google.com

ip.ttl == 1

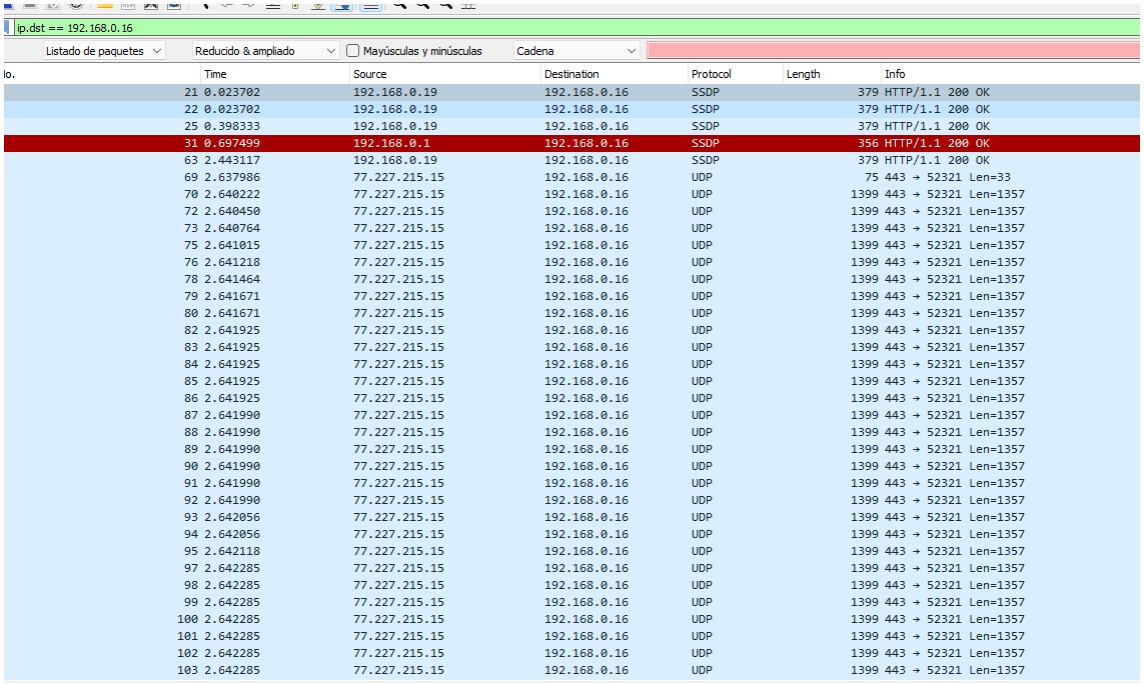
Nos ayuda a visualizar todos los paquetes IP en el que haiga un campo TTl sea igual a 1



No.	Time	Source	Destination	Protocol	Length	Info
12238	30.330645	192.168.0.16	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
12240	30.331476	192.168.0.16	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
12242	30.345777	192.168.0.16	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
12244	30.346385	192.168.0.16	224.0.0.251	MDNS	82	Standard query 0x0000 PTR _googlecast._tcp.local, "QM" question
15445	33.846655	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15447	33.847249	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15450	33.847661	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0x9a25 A wpad
15451	33.847888	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15453	33.847991	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0xa7e2 A wpad
15455	33.848262	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15505	34.271476	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0xa7e2 A wpad
15506	34.271485	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0x9a25 A wpad
15521	34.848253	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15523	34.849224	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15525	34.849985	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
15527	34.850536	192.168.0.16	224.0.0.251	MDNS	70	Standard query 0x0000 A wpad.local, "QM" question
44047	76.583004	192.168.0.11	224.0.0.22	IGMPv3	60	Membership Report / Join group 224.0.0.251 for any sources
44563	78.584746	192.168.0.11	224.0.0.22	IGMPv3	60	Membership Report / Join group 224.0.0.251 for any sources
58180	112.433272	192.168.0.1	224.0.0.1	IGMPv3	60	Membership Query, general
58181	112.433803	192.168.5.1	224.0.0.1	IGMPv3	60	Membership Query, general
58182	112.441303	192.168.0.16	224.0.0.22	IGMPv3	62	Membership Report / Join group 224.0.0.252 for any sources / Join group 239.255.25
59299	113.776406	192.168.0.19	224.0.0.22	IGMPv3	60	Membership Report / Join group 239.255.255.250 for any sources
59420	113.941906	192.168.0.16	224.0.0.22	IGMPv3	54	Membership Report / Join group 224.0.0.251 for any sources
64008	119.713140	192.168.0.10	224.0.0.22	IGMPv3	64	Membership Report / Join group 239.255.255.250 for any sources
84858	144.313312	192.168.0.16	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
84970	144.321364	192.168.0.16	239.255.255.250	SSDP	211	M-SEARCH * HTTP/1.1
87229	145.324407	192.168.0.16	239.255.255.250	SSDP	211	M-SEARCH * HTTP/1.1
87230	145.324407	192.168.0.16	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
87400	146.334872	192.168.0.16	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
87401	146.334872	192.168.0.16	239.255.255.250	SSDP	211	M-SEARCH * HTTP/1.1
87662	147.349584	192.168.0.16	239.255.255.250	SSDP	216	M-SEARCH * HTTP/1.1
87663	147.349584	192.168.0.16	239.255.255.250	SSDP	211	M-SEARCH * HTTP/1.1
90326	163.923841	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0x8b15 A hola
90328	163.924092	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0x70f8 AAAA hola
90436	164.349696	192.168.0.16	224.0.0.252	LLMNR	64	Standard query 0x70f8 AAAA hola

ip.dst == 192.168.0.16

Podemos visualizar el host destino 192.168.0.16

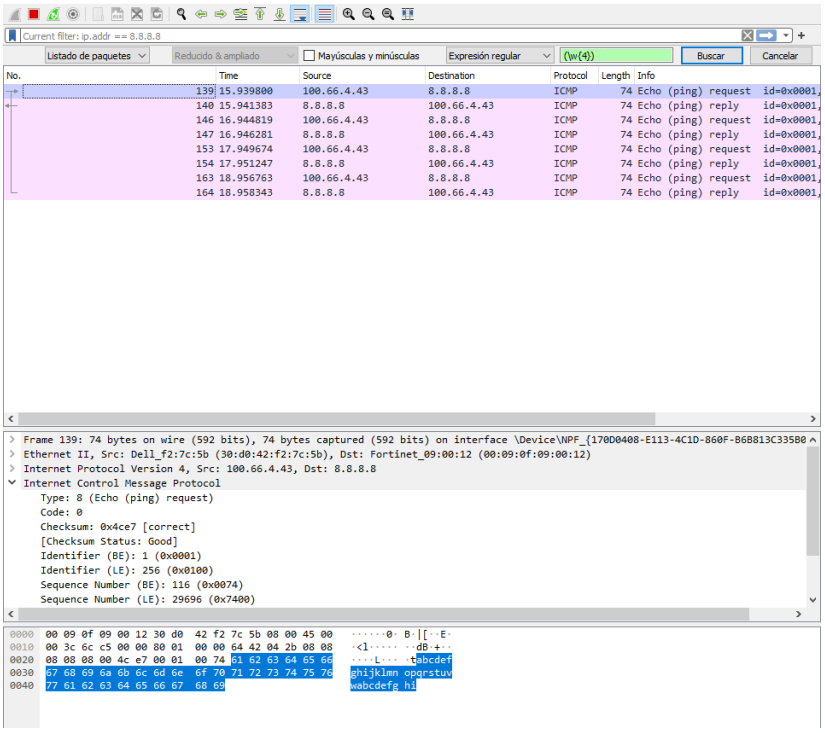


No.	Time	Source	Destination	Protocol	Length	Info
21	0.023702	192.168.0.19	192.168.0.16	SSDP	379	HTTP/1.1 200 OK
22	0.023702	192.168.0.19	192.168.0.16	SSDP	379	HTTP/1.1 200 OK
25	0.398333	192.168.0.19	192.168.0.16	SSDP	379	HTTP/1.1 200 OK
31	0.697499	192.168.0.1	192.168.0.16	SSDP	356	HTTP/1.1 200 OK
63	2.443117	192.168.0.19	192.168.0.16	SSDP	379	HTTP/1.1 200 OK
69	2.637986	77.227.215.15	192.168.0.16	UDP	75	443 → 52321 Len=33
70	2.640222	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
72	2.640450	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
73	2.640764	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
75	2.641015	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
76	2.641218	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
78	2.641464	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
79	2.641671	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
80	2.641671	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
82	2.641925	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
83	2.641925	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
84	2.641925	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
85	2.641925	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
86	2.641925	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
87	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
88	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
89	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
90	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
91	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
92	2.641990	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
93	2.642056	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
94	2.642056	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
95	2.642118	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
97	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
98	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
99	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
100	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
101	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
102	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357
103	2.642285	77.227.215.15	192.168.0.16	UDP	1399	443 → 52321 Len=1357

Regular Expresión:

(\w{4})

Busca una palabra con 4 letras



No.	Time	Source	Destination	Protocol	Length	Info
139	15.939800	100.66.4.43	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001,
140	15.941383	8.8.8.8	100.66.4.43	ICMP	74	Echo (ping) reply id=0x0001,
146	16.944819	100.66.4.43	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001,
147	16.946281	8.8.8.8	100.66.4.43	ICMP	74	Echo (ping) reply id=0x0001,
153	17.949674	100.66.4.43	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001,
154	17.951247	8.8.8.8	100.66.4.43	ICMP	74	Echo (ping) reply id=0x0001,
163	18.956763	100.66.4.43	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001,
164	18.958343	8.8.8.8	100.66.4.43	ICMP	74	Echo (ping) reply id=0x0001,

```
Frame 139: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF_{170D0408-E113-4C1D-860F-B6B813C335B0
Ethernet II, Src: Dell_f2:7c:5b (30:d0:42:f2:7c:5b), Dst: Fortinet_09:00:12 (00:09:0f:09:00:12)
Internet Protocol Version 4, Src: 100.66.4.43, Dst: 8.8.8.8
Internet Control Message Protocol
    Type: 8 (Echo (ping) request)
    Code: 0
    Checksum: 0x4ce7 [correct]
    [Checksum Status: Good]
    Identifier (BE): 1 (0x0001)
    Identifier (LE): 256 (0x0100)
    Sequence Number (BE): 116 (0x0074)
    Sequence Number (LE): 29696 (0x7400)
```

```
0000  00 09 0f 09 00 12 30 d0  42 f2 7c 5b 08 00 45 00   ......0· B·|[··E·
0010  00 3c 6c c5 00 00 80 01  00 00 64 42 04 2b 08 08   ·<l····· ··dB·+··
0020  08 08 08 00 4c e7 00 01  00 74 61 62 63 64 65 66   ····L··· ·tabcdef
0030  67 68 69 6a 6b 6c 6d 6e  6f 70 71 72 73 74 75 76   ghijklmn opqrstuv
0040  77 61 62 63 64 65 66 67  68 69                    wabcdefg hi
```

\d+

Búsqueda de número