

以太网实验

林宸昊 PB20000034

1.
 - > Frame 51: 529 bytes on wire (4232 bits), 529 bytes captured (4232 bits) on interface \Device\NPF_{28F4I
 - > Ethernet II, Src: IntelCor_14:76:ed (34:cf:f6:14:76:ed), Dst: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)
 - > Destination: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)
 - > Source: IntelCor_14:76:ed (34:cf:f6:14:76:ed)
 - Type: IPv4 (0x0800)
 - > Data (515 bytes)
 - Data: 45000203b48640008006000072d6f80d8077f50c2e3c0050df9258213a0d792050180201...
 - [Length: 515]

0000	ac 74 09 35 8a e2 34 cf f6 14 76 ed 08 00 45 00	.t.5..4. .v...E.
0010	02 03 b4 86 40 00 80 06 00 00 72 d6 f8 0d 80 77@... ..r....w
0020	f5 0c 2e 3c 00 50 df 92 58 21 3a 0d 79 20 50 18	...<P.. X!..y P.
0030	02 01 e2 5d 00 00 47 45 54 20 2f 77 69 72 65 73	...]..GE T /wires
0040	68 61 72 6b 2d 6c 61 62 73 2f 48 54 54 50 2d 65	hark-lab s/HTTP-e
0050	74 68 65 72 65 61 6c 2d 6c 61 62 2d 66 69 6c 65	thereal- lab-file
0060	33 2e 68 74 6d 6c 20 48 54 54 50 2f 31 2e 31 0d	3.html H TTP/1.1.
0070	0a 48 6f 73 74 3a 20 67 61 69 61 2e 63 73 2e 75	.Host: g aia.cs.u

2. > Destination: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)

不是。应当是所使用的网络的虚拟路由地址。

3. Type: IPv4 (0x0800)

4.

0000	ac 74 09 35 8a e2 34 cf f6 14 76 ed 08 00 45 00	.t.5..4. .v...E.
0010	02 03 b4 86 40 00 80 06 00 00 72 d6 f8 0d 80 77@... ..r....w
0020	f5 0c 2e 3c 00 50 df 92 58 21 3a 0d 79 20 50 18	...<P.. X!..y P.
0030	02 01 e2 5d 00 00 47 45 54 20 2f 77 69 72 65 73	...]..GE T /wires

共16 * 3 + 7 = 55字节。

5.
 - > Frame 55: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface \Device\NPF_{
 - > Ethernet II, Src: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2), Dst: IntelCor_14:76:ed (34:cf:f6:14:76:ed)
 - > Destination: IntelCor_14:76:ed (34:cf:f6:14:76:ed)
 - > Source: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)
 - Type: IPv4 (0x0800)
 - > Data (1500 bytes)
 - Data: 456805dc602b4000240610218077f50c72d6f80d00502e3c3a0d7920df9259fc501000ed...
 - [Length: 1500]

0000	34 cf f6 14 76 ed ac 74 09 35 8a e2 08 00 45 68	4...v..t .5....Eh
0010	05 dc 60 2b 40 00 24 06 10 21 80 77 f5 0c 72 d6	..`+@.\$..!..w..r.
0020	f8 0d 00 50 2e 3c 3a 0d 79 20 df 92 59 fc 50 10	...P.<.: y ..Y.P.
0030	00 ed 30 b5 00 00 48 54 54 50 2f 31 2e 31 20 32	..0...HT TP/1.1 2
0040	30 30 20 4f 4b 0d 0a 44 61 74 65 3a 20 46 72 69	00 OK..D ate: Fri

均不是。与第二问相同。

6. Destination: IntelCor_14:76:ed (34:cf:f6:14:76:ed)

7. Type: IPv4 (0x0800)

- 8.

0000	34 c f f6 14 76 ed ac 74 09 35 8a e2 08 00 45 68	4...v..t .5....Eh
0010	05 dc 60 2b 40 00 24 06 10 21 80 77 f5 0c 72 d6	..`+@.\$.!..w..r.
0020	f8 0d 00 50 2e 3c 3a 0d 79 20 df 92 59 fc 50 10	...P.<.: y ..Y.P.
0030	00 ed 30 b5 00 00 48 54 54 50 2f 31 2e 31 20 32	..0...HT TP/1.1 2
0040	30 30 20 4f 4b 0d 0a 44 61 74 65 3a 20 46 72 69	00 OK..D ate: Fri

共4 * 16 + 4 = 68字节。

9.

接口: 114.214.248.13 --- 0x5		
Internet 地址	物理地址	类型
114.214.240.1	ac-74-09-35-8a-e2	动态
114.214.255.255	ff-ff-ff-ff-ff-ff	静态
224.0.0.22	01-00-5e-00-00-16	静态
224.0.0.251	01-00-5e-00-00-fb	静态
224.0.0.252	01-00-5e-00-00-fc	静态
239.255.255.250	01-00-5e-7f-ff-fa	静态
接口: 192.168.75.1 --- 0xf		
Internet 地址	物理地址	类型
192.168.75.254	00-50-56-f1-21-df	动态
192.168.75.255	ff-ff-ff-ff-ff-ff	静态
224.0.0.22	01-00-5e-00-00-16	静态
224.0.0.251	01-00-5e-00-00-fb	静态
224.0.0.252	01-00-5e-00-00-fc	静态
239.255.255.250	01-00-5e-7f-ff-fa	静态
接口: 192.168.126.1 --- 0x17		
Internet 地址	物理地址	类型
192.168.126.254	00-50-56-e8-fc-57	动态
224.0.0.22	01-00-5e-00-00-16	静态
224.0.0.251	01-00-5e-00-00-fb	静态
224.0.0.252	01-00-5e-00-00-fc	静态
239.255.255.250	01-00-5e-7f-ff-fa	静态
接口: 172.29.208.1 --- 0x4b		
Internet 地址	物理地址	类型
172.29.223.255	ff-ff-ff-ff-ff-ff	静态
224.0.0.22	01-00-5e-00-00-16	静态
224.0.0.251	01-00-5e-00-00-fb	静态
239.255.255.250	01-00-5e-7f-ff-fa	静态

列值含义已显示。

10.	8 1.915084 IntelCor_14:76:ed Hangzhou_35:8a:e2 ARP 42 Who has 114.214.240.1? Tell 114.214.248.13
<	
>	Frame 8: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface \Device\NPF_{28F4B2F8-01FA-4861-94AA-BAA450D5F52E}, id 0
▼	Ethernet II, Src: IntelCor_14:76:ed (34:cf:f6:14:76:ed), Dst: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)
>	Destination: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)
>	Source: IntelCor_14:76:ed (34:cf:f6:14:76:ed)
>	Type: ARP (0x0806)
>	Address Resolution Protocol (request)

事实上此处应为Broadcast，目的端口地址应为ff:ff:ff:ff:ff:ff，但使用校园网未能捕捉到这一请求消息。

11.

Type: ARP (0x0806)

12. 1.

Opcode: request (1)

Sender MAC address: IntelCor_14:76:ed (34:cf:f6:14:76:ed)

Sender IP address: 114.214.248.13

Target MAC address: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)

0000	ac 74 09 35 8a e2 34 cf f6 14 76 ed 08 06 00 01	.t.5..4. .v.....
0010	08 00 06 04 00 01 34 cf f6 14 76 ed 72 d6 f8 0d4. .v.r...
0020	ac 74 09 35 8a e2 72 d6 f0 01	.t.5..r. ..

共16 + 4 = 20字节。

2.

Opcode: request (1)

3.

Sender IP address: 114.214.248.13

4. 操作字段为request, 意思即为查询以太网地址。以及对应的INFO:

Who has 114.214.240.1? Tell 114.214.248.13

13. 1.

Opcode: reply (2)

Sender MAC address: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)

Sender IP address: 114.214.240.1

0000	34 cf f6 14 76 ed ac 74 09 35 8a e2 08 06 00 01	4...v..t .5.....
0010	08 00 06 04 00 02 ac 74 09 35 8a e2 72 d6 f0 01t .5..r...
0020	34 cf f6 14 76 ed 72 d6 f8 0d 00 00 00 00 00	4...v.r.
0030	00 00 00 00 00 00 00 00

同样为20字节。

2.

Opcode: reply (2)

3. Opcode: reply (2)

Sender MAC address: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)

Sender IP address: 114.214.240.1

Target MAC address: IntelCor_14:76:ed (34:cf:f6:14:76:ed)

Target IP address: 114.214.248.13

114.214.240.1 is at ac:74:09:35:8a:e2

14. > Destination: IntelCor_14:76:ed (34:cf:f6:14:76:ed)

> Source: Hangzhou_35:8a:e2 (ac:74:09:35:8a:e2)

15. ARP的广播信息是对所有同一网段内的电脑进行广播, 均可收到, 但是回复信息是单播的, 只有请求的那台电脑才能收到。