

## Report for LAB 9-1: ARP

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Part I		
1	a. Hardware type: 00 01	b. Protocol type: 08 00
	c. Hardware length: 06	d. Protocols length: 04
	e. Operation code: 00 01 Meaning: request또는 reply, 즉 응답또는 요청 중 나타내고, 그에 따른 주소 해결 유형을 알려 준다.	
	f. Source hardware address. a4 5e 60 f1 f0 49	g. Source IP address? ac 1e 46 5f
	h. Destination hardware address: 00 00 00 00 00 00	i. Destination IP address: ac 1e 46 e1
2	Are answers to question 1 verified by the information in the detail pane lane? Yes.  <div style="border: 1px solid black; padding: 5px;"> <p>▶ Frame 3854: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0</p> <p>▶ Ethernet II, Src: Apple_f1:f0:49 (a4:5e:60:f1:f0:49), Dst: Broadcast (ff:ff:ff:ff:ff:ff)</p> <p>▼ Address Resolution Protocol (request)</p> <p>Hardware type: Ethernet (1)</p> <p>Protocol type: IPv4 (0x0800)</p> <p>Hardware size: 6</p> <p>Protocol size: 4</p> <p>Opcode: request (1)</p> <p>Sender MAC address: Apple_f1:f0:49 (a4:5e:60:f1:f0:49)</p> <p>Sender IP address: 172.30.70.95</p> <p>Target MAC address: 00:00:00_00:00:00 (00:00:00:00:00:00)</p> <p>Target IP address: 172.30.70.225</p> </div>	
3	Type of destination hardware address: Broadcast  Which interface does the destination hardware address define? Network layer와 Link layer 사이	
4	Number of bytes of 0s: 6  Explain : 타겟 Mac 주소를 의미하기 때문에 6개의 16진수가 나오게 되는데, destination hardware address를 알지 못하므로 00이 6개가 나오게 된다.	

Part II		
1	a. Hardware type: 00 01	b. Protocol type: 08 00
	c. Hardware length: 06	d. Protocols length: 04
	e. Operation code: 00 02	
	f. Source hardware address. 14 32 d1 92 43 a7	g. Source IP address? ac 1e 46 e1

	h. Destination hardware address: a4 5e 60 f1 f0 49	i. Destination IP address: ac 1e 46 5f
2	<p>Are answers to question 1 verified by the information in the detail pane lane? Yes.</p> <pre> ▶ Frame 3856: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0 ▶ Ethernet II, Src: Cisco_ba:80:5f (84:b2:61:ba:80:5f), Dst: Apple_f1:f0:49 (a4:5e:60:f1:f0:49) ▼ Address Resolution Protocol (reply)   Hardware type: Ethernet (1)   Protocol type: IPv4 (0x0800)   Hardware size: 6   Protocol size: 4   Opcode: reply (2)   Sender MAC address: SamsungE_92:43:a7 (14:32:d1:92:43:a7)   Sender IP address: 172.30.70.225   Target MAC address: Apple_f1:f0:49 (a4:5e:60:f1:f0:49)   Target IP address: 172.30.70.95 </pre>	
3	<p>Type of destination hardware address: Unicast</p> <p>Which interface does the destination hardware address define? Network layer와 Link layer 사이</p>	

## - arp wireshark 캡처

arp.pcapng

No.	Time	Source	Destination	Protocol	Length	Info
3854	35.159169	Apple_f1:f0:49	Broadcast	ARP	42	Who has 172.30.70.225? Tell 172.30.70.95
3856	35.160207	Cisco_ba:80:5f	Apple_f1:f0:49	ARP	42	172.30.70.225 is at 14:32:d1:92:43:a7

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▶ Frame 3854: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0
▶ Ethernet II, Src: Apple_f1:f0:49 (a4:5e:60:f1:f0:49), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▼ Address Resolution Protocol (request)
  Hardware type: Ethernet (1)
  Protocol type: IPv4 (0x0800)
  Hardware size: 6
  Protocol size: 4
  Opcode: request (1)
  Sender MAC address: Apple_f1:f0:49 (a4:5e:60:f1:f0:49)
  Sender IP address: 172.30.70.95
  Target MAC address: 00:00:00_00:00:00 (00:00:00:00:00:00)
  Target IP address: 172.30.70.225

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0000  ff ff ff ff ff ff a4 5e 60 f1 f0 49 08 06 00 01  .....^`..I....
0010  08 00 06 04 00 01 a4 5e 60 f1 f0 49 ac 1e 46 5f  .....^`..I..F_
0020  00 00 00 00 00 00 ac 1e 46 e1  .....F.

```

arp

Packets: 4388 · Displayed: 2 (0.0%) · Load time: 0:0.75 · Profile: Default

arp.pcapng

arp

No.	Time	Source	Destination	Protocol	Length	Info
3854	35.159169	Apple_f1:f0:49	Broadcast	ARP	42	Who has 172.30.70.225? T...
3856	35.160207	Cisco_ba:80:5f	Apple_f1:f0:49	ARP	42	172.30.70.225 is at 14:3...

▶ Frame 3856: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 0

▶ Ethernet II, Src: Cisco\_ba:80:5f (84:b2:61:ba:80:5f), Dst: Apple\_f1:f0:49 (a4:5e:60:f1:f0:49)

▼ Address Resolution Protocol (reply)

Hardware type: Ethernet (1)  
 Protocol type: IPv4 (0x0800)  
 Hardware size: 6  
 Protocol size: 4  
 Opcode: reply (2)  
 Sender MAC address: SamsungE\_92:43:a7 (14:32:d1:92:43:a7)  
 Sender IP address: 172.30.70.225  
 Target MAC address: Apple\_f1:f0:49 (a4:5e:60:f1:f0:49)  
 Target IP address: 172.30.70.95

0000	a4 5e 60 f1 f0 49 84 b2 61 ba 80 5f 08 06 00 01	.^...I.. a... ..
0010	08 00 06 04 00 02 14 32 d1 92 43 a7 ac 1e 46 e1	.....2 ..C...F.
0020	a4 5e 60 f1 f0 49 ac 1e 46 5f	.^...I.. F

#### - 한줄 소감

와이어 샤크를 돌려보면서 이것저것 알아봐야 했고, 찾아봐야 했습니다. 덕분에 링크 계층이라던가, 네트워크 계층 등 새로운 것을 많이 알게 되었습니다. 아직은 생소하고 어렵네요.