

과제 06 수행보고서



정보통신공학전공

200301582

김성태

1. 과제 개요



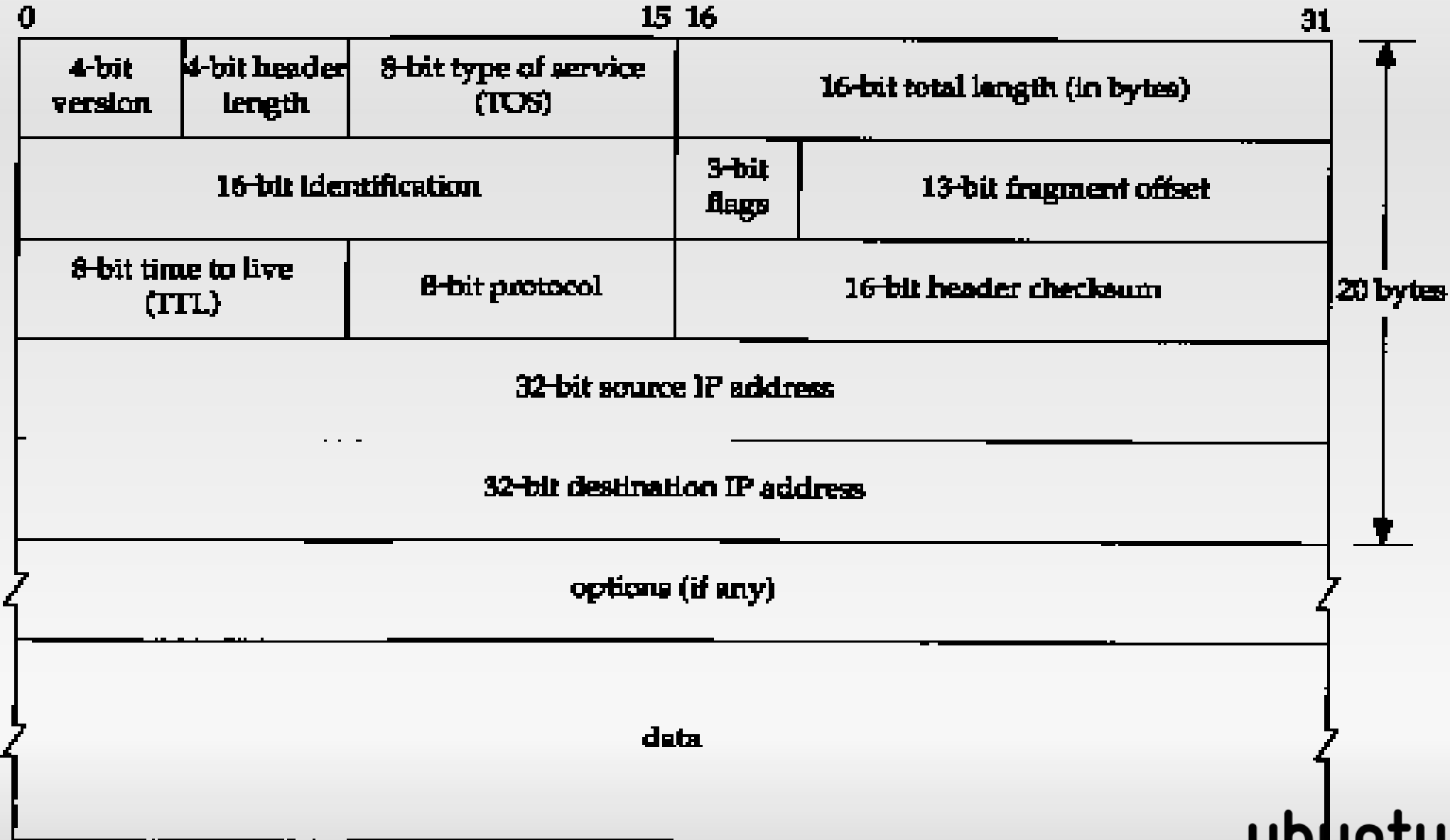
- SimTL – IP 디코더 모듈 개발
 - IP 관련 RFC 문서를 이해한다.
 - RFC 1466 – Guidelines for Management of IP Address Space
 - SimTL 에서 IP 프로토콜을 분석하는 모듈, 즉 IP 디코더 (decoder) 를 개발하고, 요약 파일에 관련 부분을 추가한다.

2. 수행 과제 내용



- 요약 파일에 프로토콜 유형 (IP) 와 간단한 결명을 기입한다.
- 감시한 프레임에 대해 IP 프로토콜을 분석 (디코딩) 하여 해당 파일에 기입한다.
- SimTL 의 수행 결과를 Wireshark 의 결과와 비교하여 제대로 개발되었는지 확인한다.

3. IP 패킷설명



4. RFC 791 문서 요약



- IP 패킷의 라우팅에 관한 설명 기술
 - IP 주소를 이용한 패킷 라우팅.
 - 라우팅을 위한 라우터의 구조적 개념 설명
- IP 패킷의 구성요소 설명
 - 각각 다른 프레임 위에서의 구현을 설명
 - 가변적인 데이터 링크 계층에서의 구현.

5. 실행 화면



```
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test
파일(F) 편집(E) 보기(V) 터미널(T) 탭(B) 도움말(H)
pchero@MyNote: ~/Desktop/Study/REPOR... x pchero@MyNote: ~/Desktop/Download x pchero@MyNote: ~/Desktop/Study/Program... x pchero@MyNote: /usr/include/netinet x
4 -rw-r--r-- 1 root root 1231 2008-05-12 17:16 2008_5_12_17:16:27_368011
8 -rw-r--r-- 1 root root 4765 2008-05-12 17:16 2008_5_12_17:16:27_416906
4 -rw-r--r-- 1 root root 2441 2008-05-12 17:16 2008_5_12_17:16:27_417420
4 -rw-r--r-- 1 root root 1393 2008-05-12 17:16 2008_5_12_17:16:27_554544
4 -rw-r--r-- 1 root root 611 2008-05-12 17:16 2008_5_12_17:16:28_151081
4 -rw-r--r-- 1 root root 612 2008-05-12 17:16 2008_5_12_17:16:28_151220
8 -rw-r--r-- 1 root root 4765 2008-05-12 17:16 2008_5_12_17:16:28_416799
4 -rw-r--r-- 1 root root 2653 2008-05-12 17:16 tracemanager
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$ vi 2008_5_12_17\15\28_416799
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$ vi 2008_5_12_17\15\28_416799
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$ vi 2008_5_12_17\15\28_151081
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$ cat tracemanager
1: /tmp/SimTL/2008_5_12_17:16:26_584557 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:52
2: /tmp/SimTL/2008_5_12_17:16:26_584732 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:52
3: /tmp/SimTL/2008_5_12_17:16:26_584804 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:250
4: /tmp/SimTL/2008_5_12_17:16:26_773612 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:254
5: /tmp/SimTL/2008_5_12_17:16:26_990269 IP:: 192.168.10.145---->203.253.33.6 Version:4 Header_Length:5 Service:0 Total_Length:61
6: /tmp/SimTL/2008_5_12_17:16:26_995072 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:60
7: /tmp/SimTL/2008_5_12_17:16:27_28854 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:52
8: /tmp/SimTL/2008_5_12_17:16:27_133716 IP:: 192.168.10.145---->222.122.43.50 Version:4 Header_Length:5 Service:0 Total_Length:72
9: /tmp/SimTL/2008_5_12_17:16:27_180235 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:52
10: /tmp/SimTL/2008_5_12_17:16:27_180417 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:170
11: /tmp/SimTL/2008_5_12_17:16:27_180738 IP:: 192.168.10.145---->222.122.43.50 Version:4 Header_Length:5 Service:0 Total_Length:52
12: /tmp/SimTL/2008_5_12_17:16:27_365721 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:52
13: /tmp/SimTL/2008_5_12_17:16:27_367940 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:52
14: /tmp/SimTL/2008_5_12_17:16:27_368011 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:250
15: /tmp/SimTL/2008_5_12_17:16:27_416906 IP:: 192.168.10.145---->192.168.0.1 Version:4 Header_Length:5 Service:0 Total_Length:1396
16: /tmp/SimTL/2008_5_12_17:16:27_417420 IP:: 192.168.10.145---->192.168.0.1 Version:4 Header_Length:5 Service:0 Total_Length:652
17: /tmp/SimTL/2008_5_12_17:16:27_554544 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:302
18: /tmp/SimTL/2008_5_12_17:16:28_151081 IP:: 192.168.10.145---->64.233.189.18 Version:4 Header_Length:5 Service:0 Total_Length:52
19: /tmp/SimTL/2008_5_12_17:16:28_151220 IP:: 192.168.10.145---->64.233.189.83 Version:4 Header_Length:5 Service:0 Total_Length:52
20: /tmp/SimTL/2008_5_12_17:16:28_416799 IP:: 192.168.10.145---->192.168.0.1 Version:4 Header_Length:5 Service:0 Total_Length:1396
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$ vi 2008_5_12_17\15\27_417420
pchero@MyNote: ~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test$
```

6. Ping 화면



```
pchero@MyNote: ~/Desktop/Download
파일(F) 편집(E) 보기(V) 터미널(T) 탭(B) 도움말(H)
pchero@MyNote: ~/Desktop/Study/REPOR... x pchero@MyNote: ~/Desktop/Download x pchero@MyNote: ~/Desktop/Study/Program... x pchero@MyNote: /usr/include/netinet x
2008 bytes from 192.168.0.1: icmp_seq=852 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=853 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=854 ttl=63 time=5.54 ms
2008 bytes from 192.168.0.1: icmp_seq=855 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=856 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=857 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=858 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=859 ttl=63 time=5.54 ms
2008 bytes from 192.168.0.1: icmp_seq=860 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=861 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=862 ttl=63 time=10.0 ms
2008 bytes from 192.168.0.1: icmp_seq=863 ttl=63 time=5.54 ms
2008 bytes from 192.168.0.1: icmp_seq=864 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=865 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=866 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=867 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=868 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=869 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=870 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=871 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=872 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=873 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=874 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=875 ttl=63 time=5.52 ms
2008 bytes from 192.168.0.1: icmp_seq=876 ttl=63 time=5.54 ms
2008 bytes from 192.168.0.1: icmp_seq=877 ttl=63 time=5.55 ms
2008 bytes from 192.168.0.1: icmp_seq=878 ttl=63 time=5.53 ms
2008 bytes from 192.168.0.1: icmp_seq=879 ttl=63 time=5.70 ms
2008 bytes from 192.168.0.1: icmp_seq=880 ttl=63 time=5.50 ms

--- 192.168.0.1 ping statistics ---
880 packets transmitted, 873 received, +2 errors, 0% packet loss, time 879296ms
rtt min/avg/max/mdev = 5.435/5.615/52.029/1.597 ms
pchero@MyNote: ~/Desktop/Download$
```

7. 상세 화면



```
2008.5.12_17:16:27.417420 = (~/Desktop/Study/REPORT/profe.kimtj/Internet_Engineering/05/SimTL/src/test) - VIM
파일(F) 편집(E) 보기(V) 터미널(T) 탭(B) 도움말(H)
2008.5.12_17:16:27.417420 = (~/Desktop/Stu... X pchero@MyNote: ~/Desktop/Download X pchero@MyNote: ~/Desktop/Study/Program... X pchero@MyNote: /usr/include/netinet X

===== IP HEADER =====
 192.168.10.145 ----> 192.168.0.1
Version :      4
Header Length :    5
Service :      0
Total Length :  652
Identification : 7826
Fragment Offset :   172
Time to Live :   64
Checksum :   52560

===== ICMP HEADER =====
Type :      88
Code :      89
Checksum :   5b5a
ID :                23900
Seq :                24414

===== ICMP DATA(HEXA) =====
60 61 62 63 64 65 66 67 68 69 6a 6b 6c 6d 6e 6f
70 71 72 73 74 75 76 77 78 79 7a 7b 7c 7d 7e 7f
80 81 82 83 84 85 86 87 88 89 8a 8b 8c 8d 8e 8f
90 91 92 93 94 95 96 97 98 99 9a 9b 9c 9d 9e 9f
a0 a1 a2 a3 a4 a5 a6 a7 a8 a9 aa ab ac ad ae af
b0 b1 b2 b3 b4 b5 b6 b7 b8 b9 ba bb bc bd be bf
c0 c1 c2 c3 c4 c5 c6 c7 c8 c9 ca cb cc cd ce cf
d0 d1 d2 d3 d4 d5 d6 d7 d8 d9 da db dc dd de df
e0 e1 e2 e3 e4 e5 e6 e7 e8 e9 ea eb ec ed ee ef
f0 f1 f2 f3 f4 f5 f6 f7 f8 f9 fa fb fc fd fe ff
00 01 02 03 04 05 06 07 08 09 0a 0b 0c 0d 0e 0f

"2008.5.12_17:16:27.417420" [읽기 전용] 63L, 2441C
5,1-8  꼭대기
```


8. wireshark



(Untitled) - Wireshark

File Edit View Go Capture Analyze Statistics Help

Filter: + Expression...

No.	Time	Source	Destination	Protocol	Info
14	0.951883	192.168.10.145	222.122.43.50	HTTP	Continuation of non-HTTP traffic
15	0.997124	192.168.10.145	64.233.189.83	TCP	36105 > https [ACK] Seq=1 Ack=1 Win=5888 Len=0 TSV=77785271 TSER=681751234
16	0.997493	192.168.10.145	64.233.189.83	SSLv2	Client Hello
17	0.999390	192.168.10.145	222.122.43.50	TCP	35185 > http-alt [ACK] Seq=21 Ack=55 Win=1002 Len=0 TSV=77785272 TSER=3457973881
18	1.184274	192.168.10.145	64.233.189.83	TCP	36105 > https [ACK] Seq=119 Ack=1349 Win=8576 Len=0 TSV=77785318 TSER=681751418
19	1.185228	192.168.10.145	64.233.189.83	TCP	36105 > https [ACK] Seq=119 Ack=1720 Win=11264 Len=0 TSV=77785318 TSER=681751418
20	1.185959	192.168.10.145	64.233.189.83	TLSv1	Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message
21	1.235419	192.168.10.145	192.168.0.1	IP	Fragmented IP protocol (proto=ICMP 0x01, off=0)
22	1.235434	192.168.10.145	192.168.0.1	ICMP	Echo (ping) request
23	1.371180	192.168.10.145	64.233.189.83	TLSv1	Application Data, Application Data
24	1.968129	192.168.10.145	64.233.189.18	TCP	38574 > https [FIN, ACK] Seq=519 Ack=2249 Win=13952 Len=0 TSV=77785514 TSER=677891520
25	1.968278	192.168.10.145	64.233.189.83	TCP	36105 > https [FIN, ACK] Seq=567 Ack=2553 Win=13952 Len=0 TSV=77785514 TSER=681752208
26	2.235435	192.168.10.145	192.168.0.1	IP	Fragmented IP protocol (proto=ICMP 0x01, off=0)
27	2.235449	192.168.10.145	192.168.0.1	ICMP	Echo (ping) request
28	3.235434	192.168.10.145	192.168.0.1	IP	Fragmented IP protocol (proto=ICMP 0x01, off=0)
29	3.235446	192.168.10.145	192.168.0.1	ICMP	Echo (ping) request

▶ Frame 21 (1410 bytes on wire, 1410 bytes captured)
▶ Ethernet II, Src: Dell_9a:53:74 (00:14:22:9a:53:74), Dst: Amit_19:66:0c (00:50:18:19:66:0c)
▼ Internet Protocol, Src: 192.168.10.145 (192.168.10.145), Dst: 192.168.0.1 (192.168.0.1)
Version: 4
Header length: 20 bytes
▼ Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00)
0000 00.. = Differentiated Services Codepoint: Default (0x00)
.... ..0. = ECN-Capable Transport (ECT): 0
.... ...0 = ECN-CE: 0
Total Length: 1396
Identification: 0x1e92 (7826)
▼ Flags: 0x02 (More Fragments)
0... = Reserved bit: Not set
.0.. = Don't fragment: Not set
...1. = More fragments: Set
Fragment offset: 0
Time to live: 64
Protocol: ICMP (0x01)
▼ Header checksum: 0xab14 [correct]
[Good: True]
[Bad: False]
Source: 192.168.10.145 (192.168.10.145)
Destination: 192.168.0.1 (192.168.0.1)
[Reassembled IP in frame: 22](#)

```
0000 00 50 18 19 66 0c 00 14 22 9a 53 74 08 00 45 00 .P..f... ".St..E.  
0010 05 74 1e 92 20 00 40 01 ab 14 c0 a8 0a 91 c0 a8 .t.. .@. ....  
0020 00 01 08 00 d9 25 1f 70 00 b1 db fc 27 48 bd 5b .....%p ....'H.[  
0030 06 00 08 09 0a 0b 0c 0d 0e 0f 10 11 12 13 14 15 ..... .....
```



9. Reference



- <http://www.tta.or.kr>
 - 한국 정보통신 기술협회
- <http://www.ietf.org>
 - Internet Engineering Task Force
- <http://kldp.org>
 - 한글 리눅스 문서 프로젝트

끝



감사합니다.