Wireshark Filter

1. Capture Filter & Display Filter

- **캡처 필터(Capture Filter)**

  - 패킷이 캡처될 때 지정

  - 지정된 표현식에 포함/제외된 패킷만 캡처

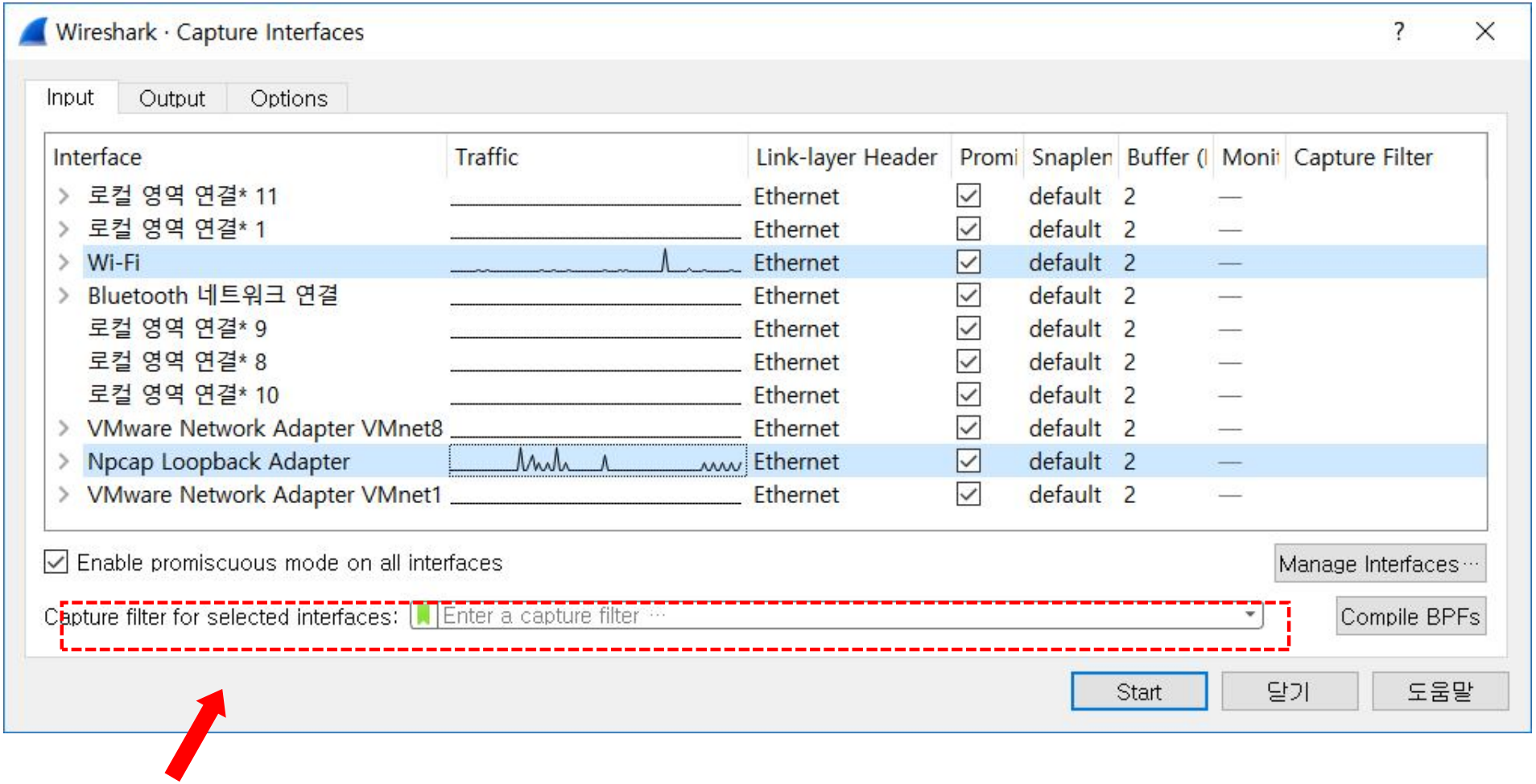
- **디스플레이 필터(Display Filter)**

  - 원하지 않는 패킷을 숨김

  - 지정된 표현식을 기반으로 원하는 패킷을 보기

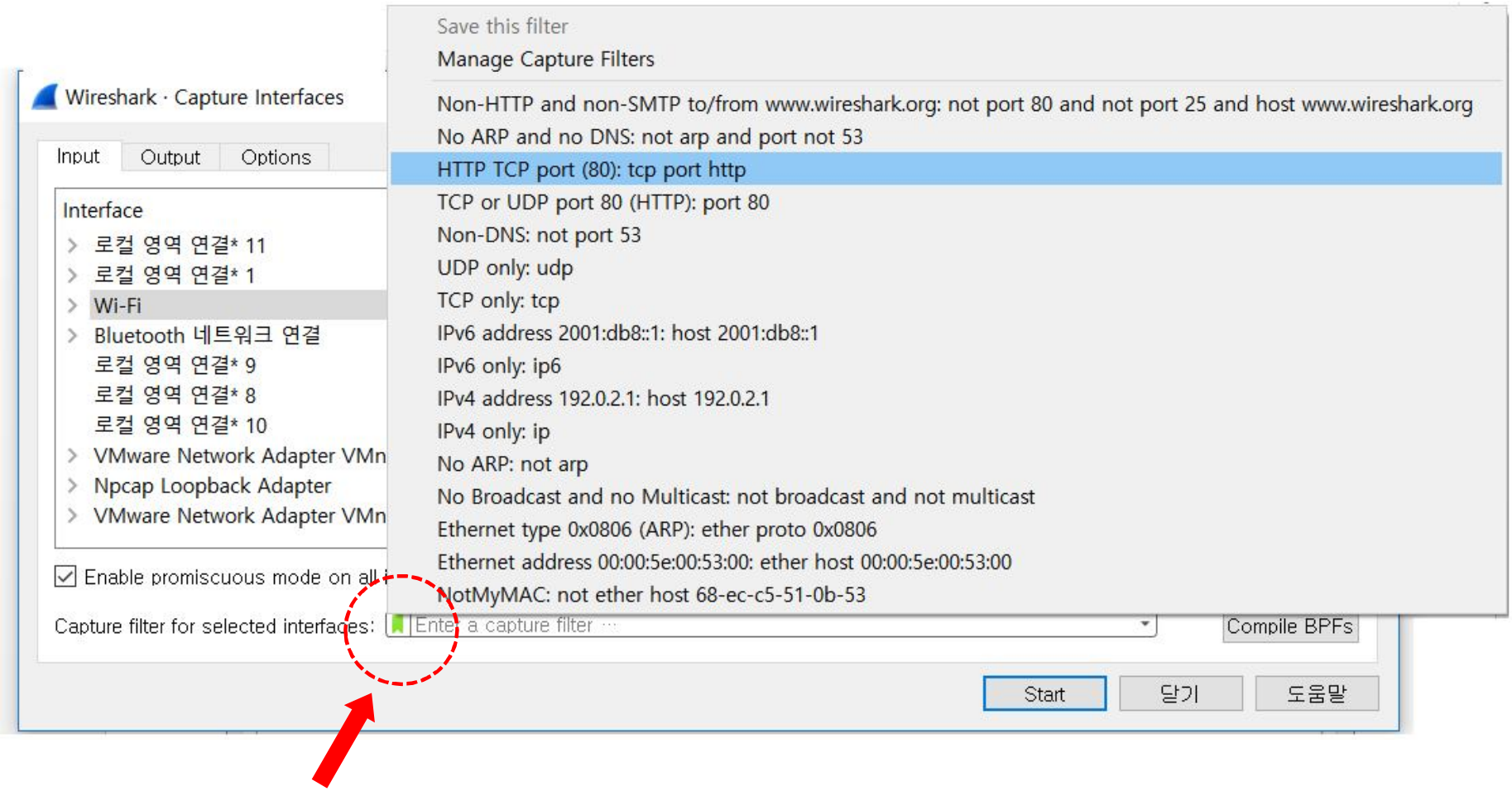
1) Capture Filter

- Capture Option 창에서 수집 필터 적용



Capture Option 창에서 수집 필터 적용

❶ Capture Option > 수집 필터 책갈피 화살표



수집 필터 책갈피 화살표

주소 기반의 트래픽 수집

❶ 특정 IP 주소에서/로 오는 트래픽 수집

- host 10.3.1.1
- host 2406:da00:ff00::6b16:f02d
- not host 10.3.1.1
- src host 10.3.1.1
- dst host 10.3.1.1
- host 10.3.1.1 or host 10.3.1.2
- host www.espn.com

주소 기반의 트래픽 수집

❷ IP 주소 범위에서/로 오는 트래픽 수집

- net 10.3.0.0/16
- net 10.3.0.0 mask 255.255.0.0
- ipv6 net 2406:da00:ff00::/64
- not dst net 10.3.0.0/16
- dst net 10.3.0.0/16
- src net 10.3.0.0/16

주소 기반의 트래픽 수집

❸ 브로드캐스트 또는 멀티캐스트 트래픽 수집

- ip broadcast
- ip multicast
- dst host ff02::1
- dst host ff02::2

주소 기반의 트래픽 수집

❹ MAC 주소 기반의 트래픽 수집

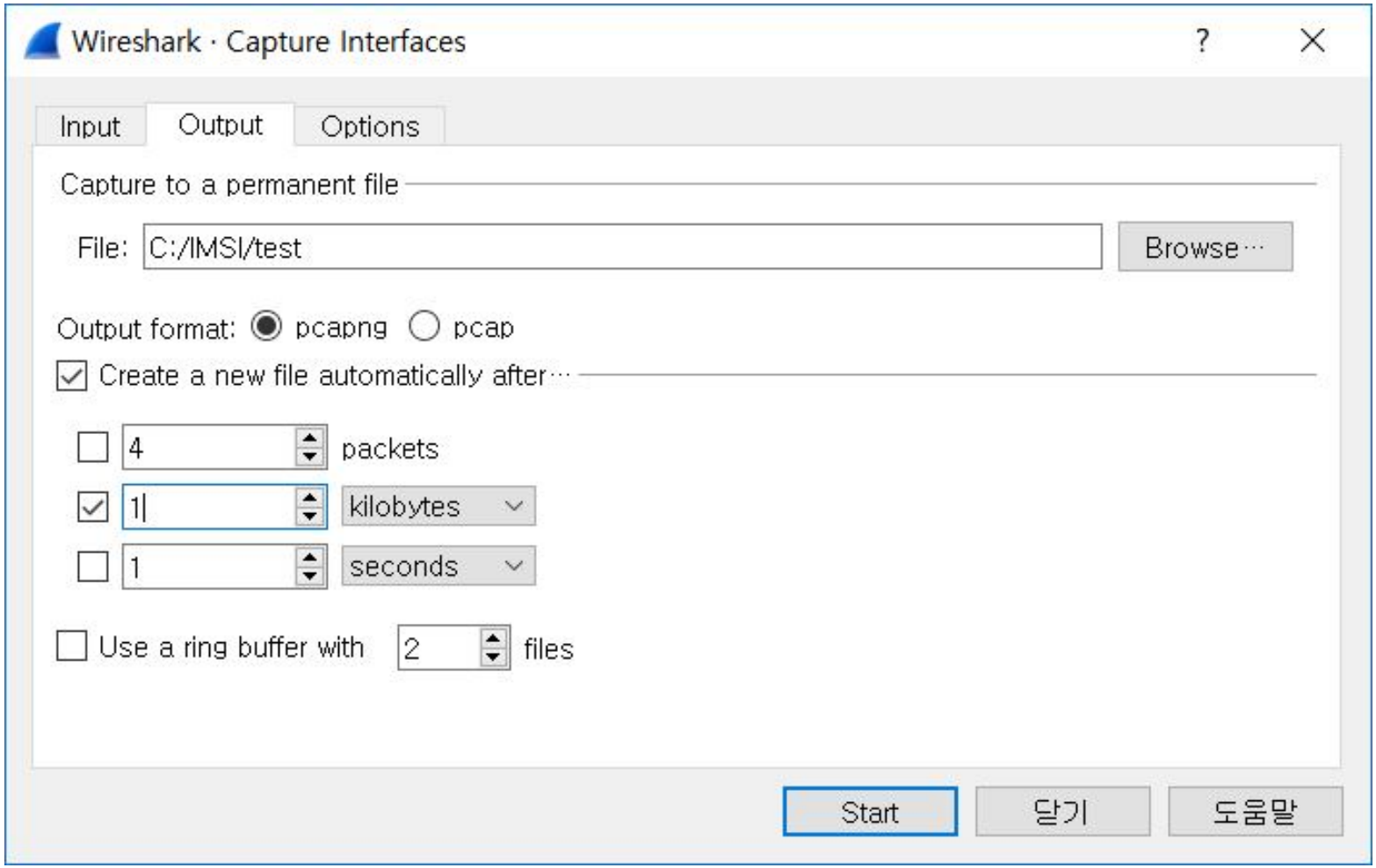
- ether host 00:08:15:00:08:15
- ether src 00:08:15:00:08:15
- ether dst 00:08:15:00:08:15
- not ether host 00:08:15:00:08:15

특정 애플리케이션에 대한 트래픽 수집

- port 53
- not port 53
- port 80
- udp port 67
- tcp port 21
- portrange 1-80
- tcp portrange 1-80
- port 20 or port 21
- host 10.3.1.1 and port 80
- host 10.3.1.1 and not port 80
- udp src port 68 and udp dst port 67

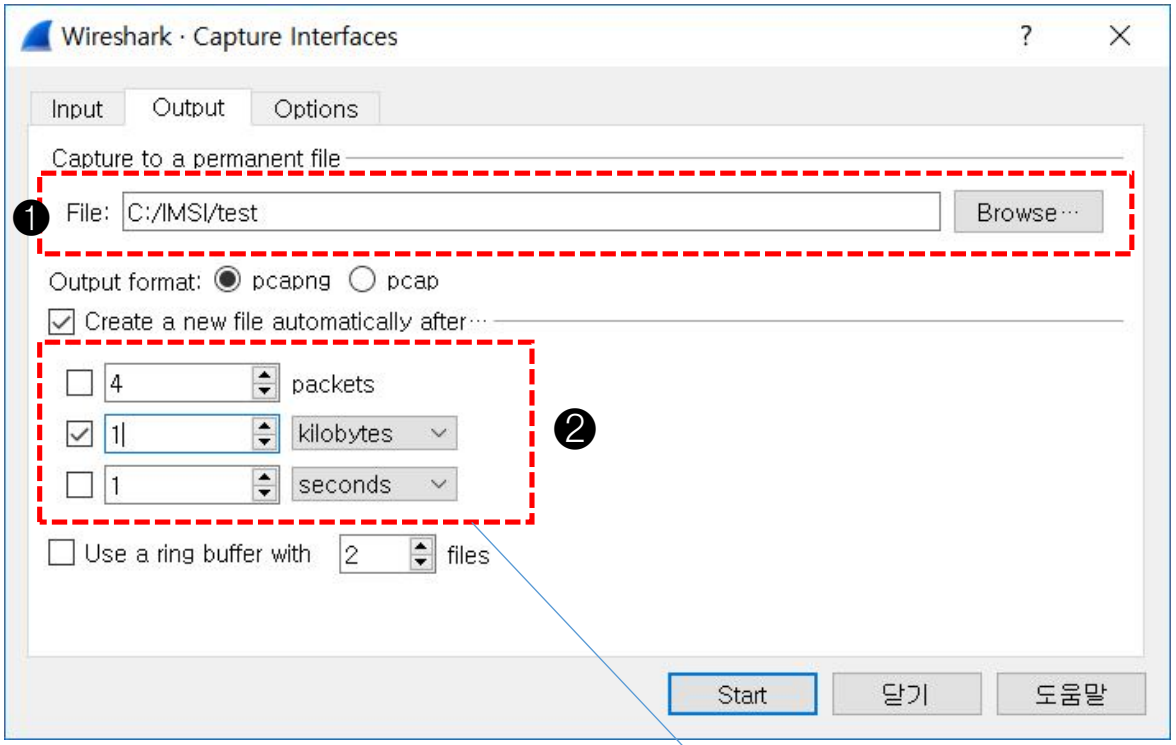
파일 집합으로 수집

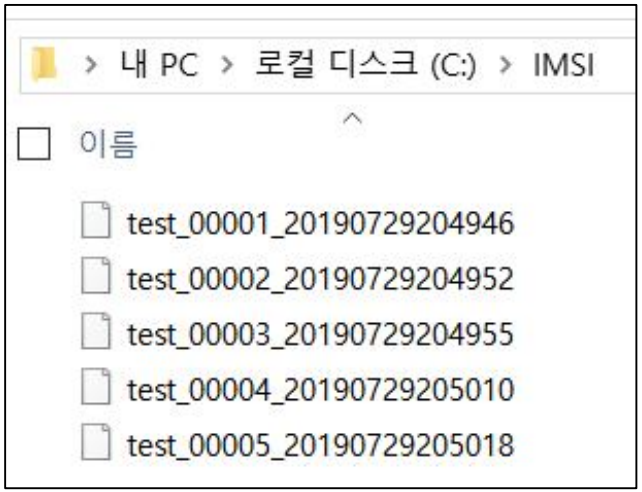
- Capture Options > Output Tab > Create a new file automatically after…



파일 집합으로 수집

- Capture Options > Output Tab > Create a new file automatically after…





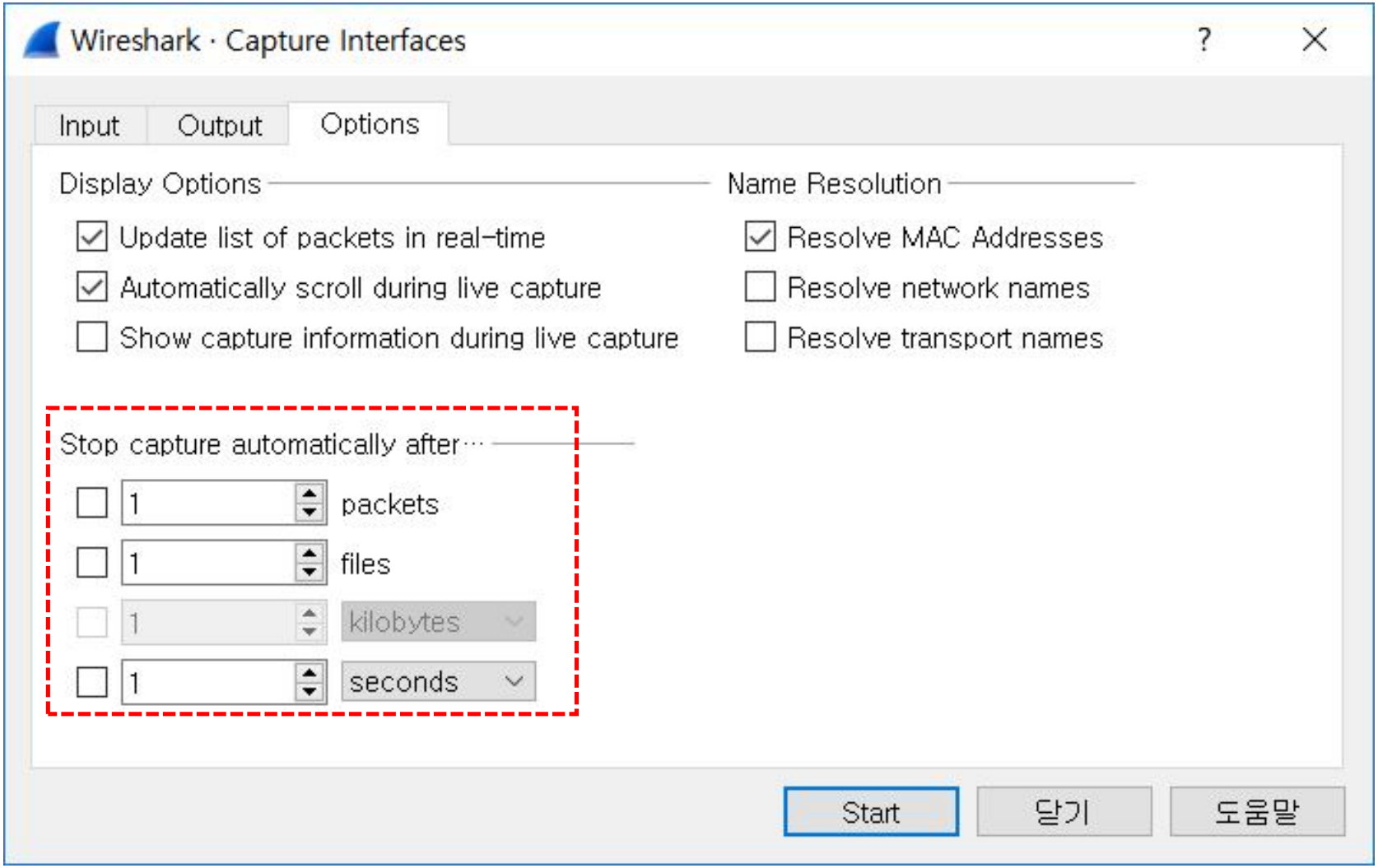
- File > Open
  - File > File set > List Files

파일당 4개의 패킷
1MB 파일 크기
1초마다

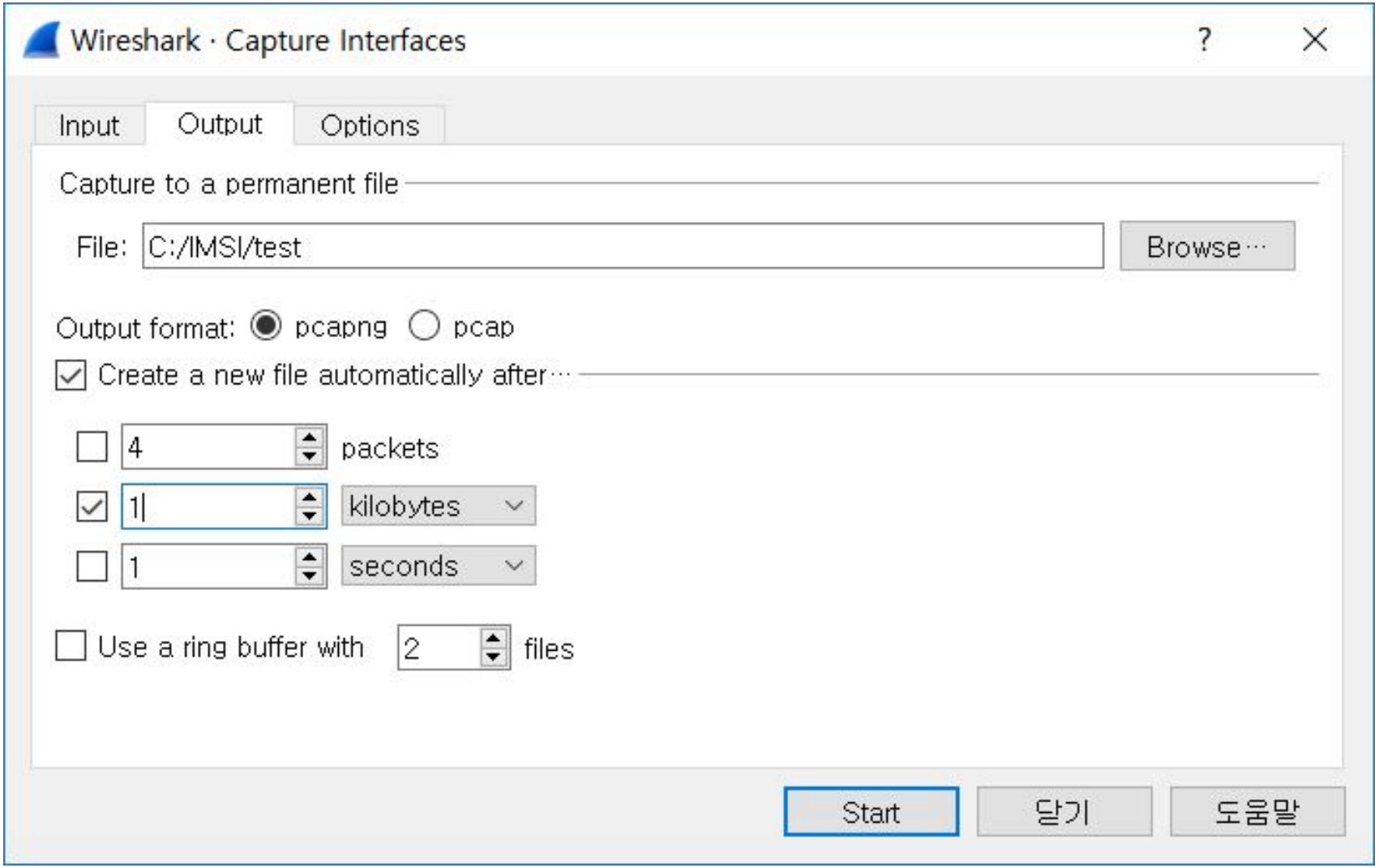
위의 어느 조건이든
먼저 만나면 파일 생성

파일 집합으로 수집

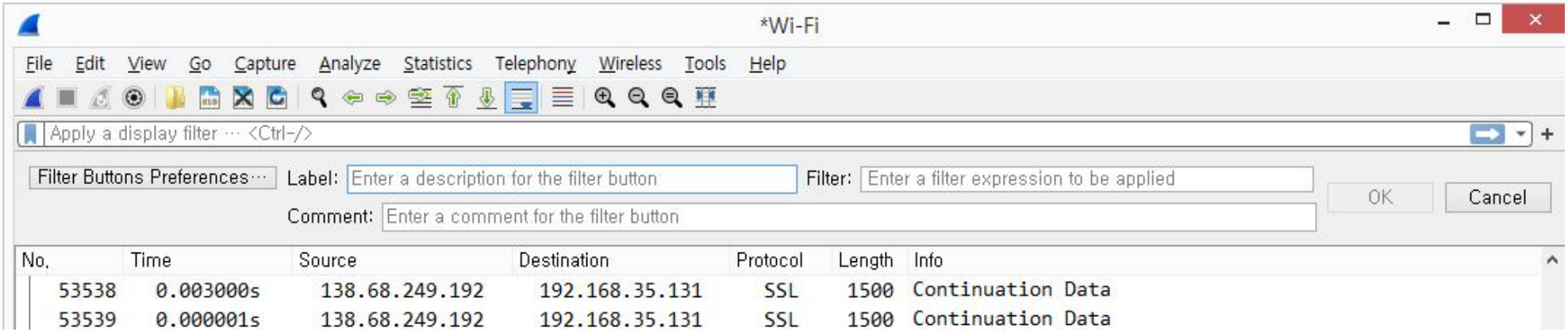
- Capture Options > Option Tab > Stop capture automatically after….



링 버퍼 사용


Wireshark · Capture Interfaces
Input
Output
Options
Capture to a permanent file
File:
C:/IMSI/test
Browse···
Output format:
pcapng
pcap
Create a new file automatically after···
4
packets
1
kilobytes
1
seconds
Use a ring buffer with
2
files
Start
닫기
도움말

2) 디스플레이 필터


*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ··· <Ctrl-/>
Filter Buttons Preferences···
Label: Enter a description for the filter button
Filter: Enter a filter expression to be applied
Comment: Enter a comment for the filter button
OK
Cancel
No. Time Source Destination Protocol Length Info
53538 0.003000s 138.68.249.192 192.168.35.131 SSL 1500 Continuation Data
53539 0.000001s 138.68.249.192 192.168.35.131 SSL 1500 Continuation Data

적절한 디스플레이 필터 문법 사용

- 간단한 디스플레이 필터 문법

  arp

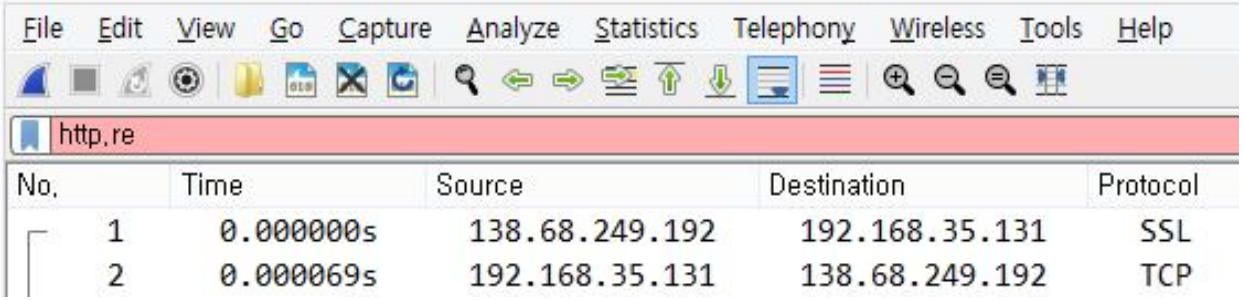
  ip

  ipv6

  tcp

적절한 디스플레이 필터 문법 사용

<디스플레이 필터 오류 탐지 메커니즘 >

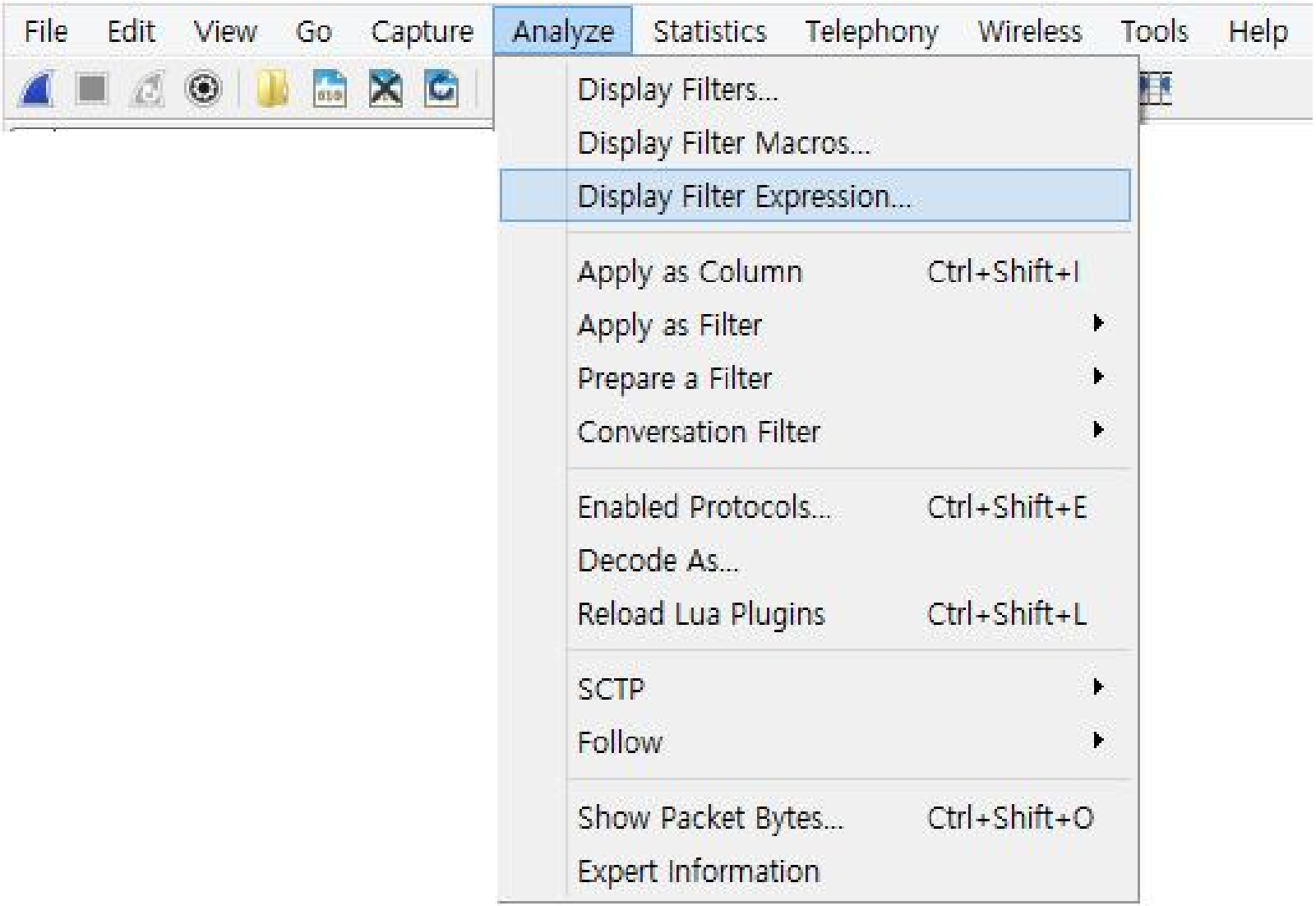


- 대소문자 구분
- 적색 배경
  - 문법 검사 실패
  - 동작하지 않음
- 녹색 배경
  - 문법 이상 없음
  - '논리 검사'는 하지 않음 (예) http && udp
- 황색 배경
  - 필터가 원하는 대로 동작하지 않는 것을 경고 (예) ip.addr != 10.1.1.1

디스플레이필터와 연산자 비교

연산자	영어표기	예제
==	eq	ip.src == 10.2.2.2
!=	ne	tcp.srcport != 80
>	gt	frame.time_relative > 1
<	lt	tcp.window_size < 1460
>=	ge	dns.count.answers >=10
<=	lt	ip.ttl < 10
	contains	http contain “GET”

- 표현식을 사용한 디스플레이 필터 구축



캡처 필터 vs 디스플레이 필터

캡처 필터 구문 예제	디스플레이 필터 예제
host 172.16.1.1	ip.host == 172.16.1.1
src host 172.16.1.1	ip.src ==172.16.1.1
dst host 172.16.1.1	ip.dst ==172.16.1.1
port 8080	tcp.port == 8080
!port 8080	!tcp.port = 8080

❶ 단순 IP 주소 호스트에게/부터의 트래픽 필터링

- ip.addr == 10.3.1.1
- !ip.addr ==10.3.1.1
- ipv6.addr == 2406:da00:ff00::6b16:f02d
- ip.src==10.3.1.1
- ip.dst == 10.3.1.1
- ip.host == www.wireshark.org

❷ 주소 범위에게/부터의 트래픽 필터링

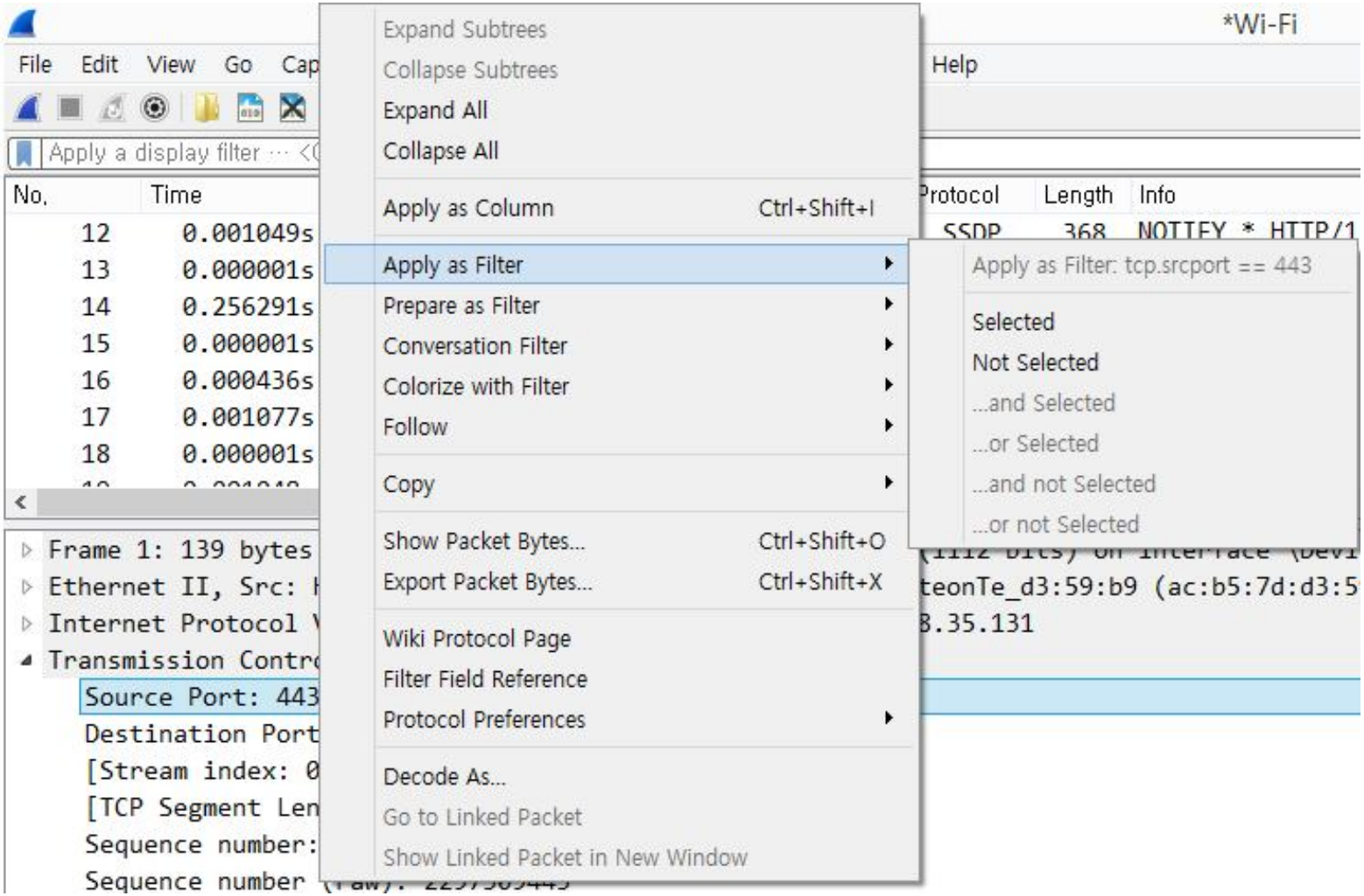
- ip.addr > 10.3.0.1 && ip.addr < 10.3.0.5
- (ip.addr >= 10.3.0.1 && ip.addr <= 10.3.0.6) && !ip.addr ==10.3.0.3
- ipv6.addr == fe80:: && ipv6.addr < fec0::

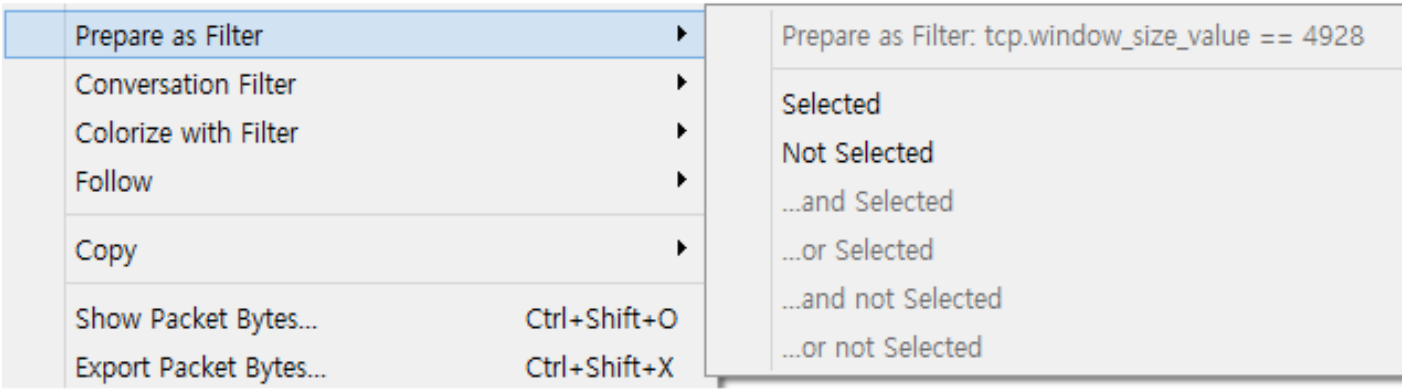
❸ IP 서브넷에서/으로부터 트래픽 필터링

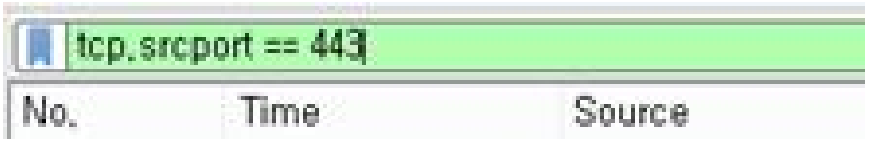
- ip.addr == 10.3.0.0/16
- ip.addr == 10.3.0.0/16 && !ip.addr ==10.3.0.3
- !ip.addr == 10.3.0.0/16 && !ip.addr ==10.2.0.0/16

- Apply as Filter

- Prepare as Filter







Selected	A == B
Not Selected	!(A==B)
… and Selected	(A==B) && (C…)
… or Selected	(A==B) || (C…)
… and Not Selected	(A==B) && !(C…)
… or Not Selected	(A==B) || !(C…)

2. Conversation Filter

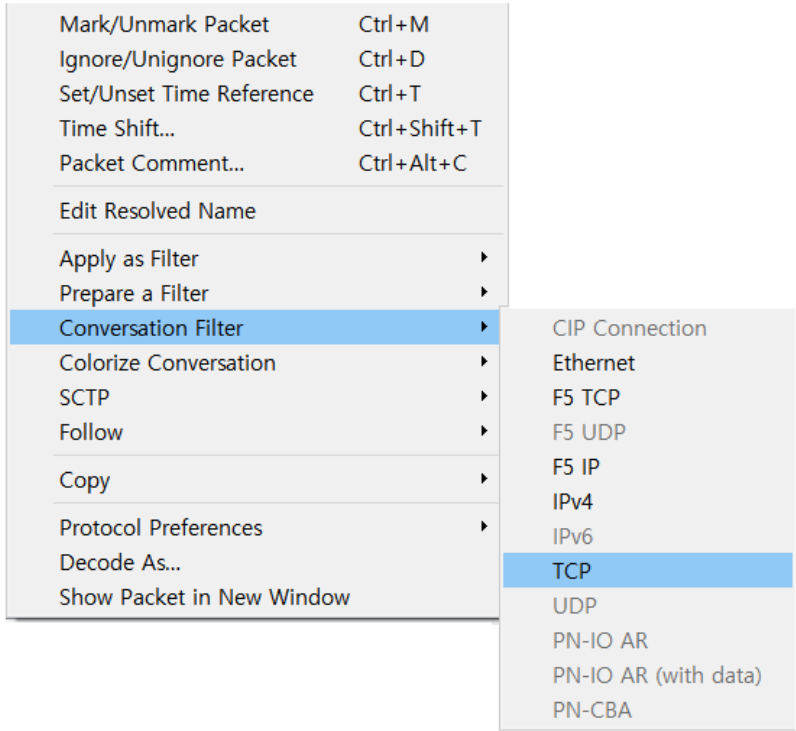
- 관심 있는 데이터를 빠르게 분석 가능
- 필터 방법 2가지

  - Conversation

  - Stream Follow

단일 TCP나 UDP 대화 필터링(Conversation Filtering)

❶ 패킷 리스트 > 패킷선택 > 오른쪽 마우스 클릭 > Conversation Filter > TCP



(ip.addr eq 24.6.173.220 and ip.addr eq 199.181.132.250) and (tcp.port eq 19941 and tcp.port eq 80)

No.	Time	Source	Destination	Protocol	Length	Info
5	0.000000	24.6.173.220	199.181.132.250	TCP	66	19941 → 80 [SYN] Seq=0 Win=8192 Len=0 MSS=
6	0.031335	199.181.132.250	24.6.173.220	TCP	66	80 → 19941 [SYN, ACK] Seq=0 Ack=1 Win=4380
7	0.000126	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [ACK] Seq=1 Ack=1 Win=65700 Len
8	0.000665	24.6.173.220	199.181.132.250	HTTP	603	GET / HTTP/1.1
9	0.041099	199.181.132.250	24.6.173.220	HTTP	484	HTTP/1.1 301 Moved Permanently (text/html
31	0.199860	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [ACK] Seq=550 Ack=431 Win=65268
4891	68.873340	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [RST, ACK] Seq=550 Ack=431 Win=

❷ Statistics > Conversation Filter

Wireshark · Conversations · http-espn101.pcapng

Ethernet · 1 | IPv4 · 37 | IPv6 | TCP · 63 | UDP · 82

Address A	Address B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	Bits/s A → B	Bits/s B → A
24.6.173.220	75.75.75.75	180	22 k	90	6973	90	15 k	0.000000	21.8143	2557	5526
24.6.173.220	199.181.132.250	7	1381	5	831	2	550	0.030245	69.1464	96	63
24.6.173.220	68.71.216.176	127	134 k	38	7147	89	127 k	0.168701	24.5121	2332	41 k
24.6.173.220	184.84.222.48	720	649 k	265	43 k	455	605 k	0.322923	70.0159	5024	69 k
24.6.173.220	143.127.102.125	10	1229	5	514	5	715	0.377829	0.1381	29 k	41 k
24.6.173.220	70.42.13.100	12	2578	7	1903	5	675	2.433476	14.8802	1023	362
24.6.173.220	68.71.212.151	7	1293	5	828	2	465	2.437970	66.7377	99	55
24.6.173.220	74.125.224.59	142	115 k	51	9643	91	105 k	2.843065	66.3320	1162	12 k
24.6.173.220	184.84.222.152	303	286 k	110	25 k	193	261 k	3.261301	70.9168	2865	29 k

Wireshark · Conversations · http-espn101.pcapng

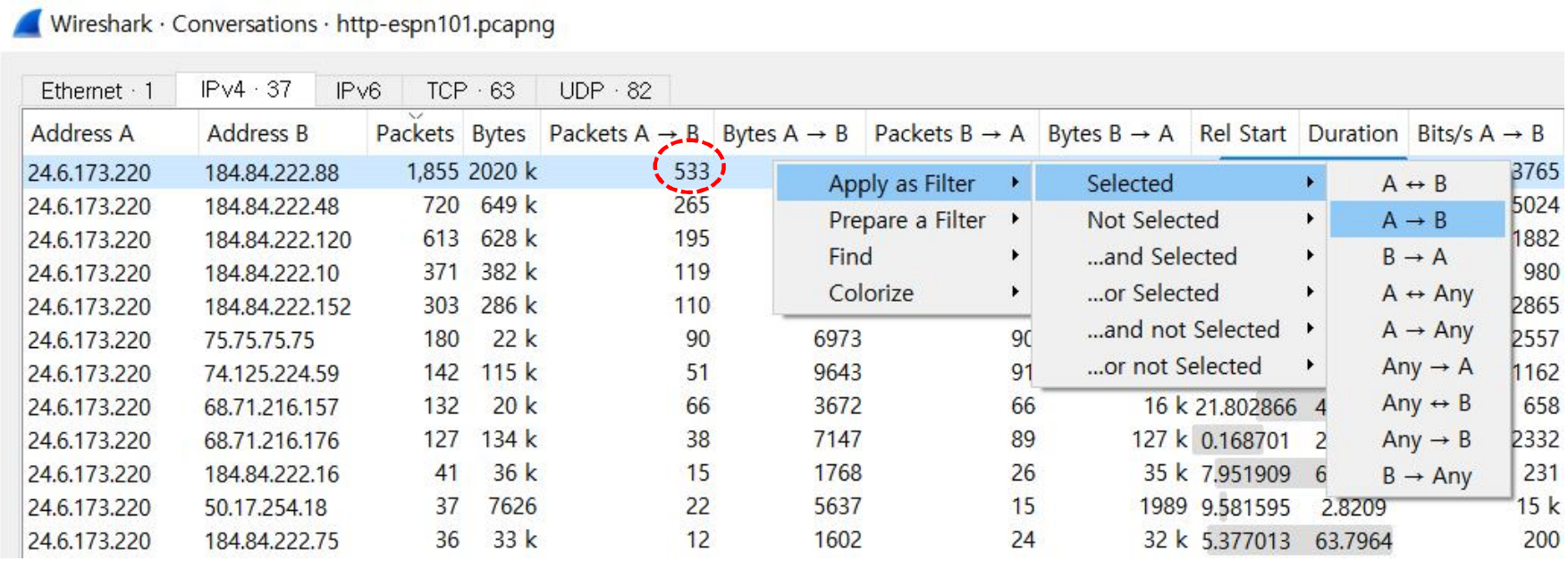
Ethernet · 1 | IPv4 · 37 | IPv6 | TCP · 63 | UDP · 82

Address A	Address B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	Bits/s A → B	Bits/s B → A
24.6.173.220	143.127.102.125	10	1229	5	514	5	715	0.377829	0.1381	29 k	41 k
24.6.173.220	68.71.212.151	7	1293						377	99	55
24.6.173.220	199.181.132.250	7	1381						464	96	63
24.6.173.220	107.20.148.253	10	1400						274	109	66
24.6.173.220	184.84.222.64	8	1422						981	90	95
24.6.173.220	184.51.159.181	10	1437	6	888				082	377	233
24.6.173.220	184.84.183.147	8	1573	5	699				235	87	108
24.6.173.220	107.22.175.32	10	1602	6	1068	4	55		153	142	71
24.6.173.220	184.84.222.112	8	2120	5	701	3	141		044	85	172
24.6.173.220	64.95.73.7	9	2311	6	1304	3	100		394	159	123
24.6.173.220	68.71.220.175	7	2355	5	1171	2	118		609	143	144

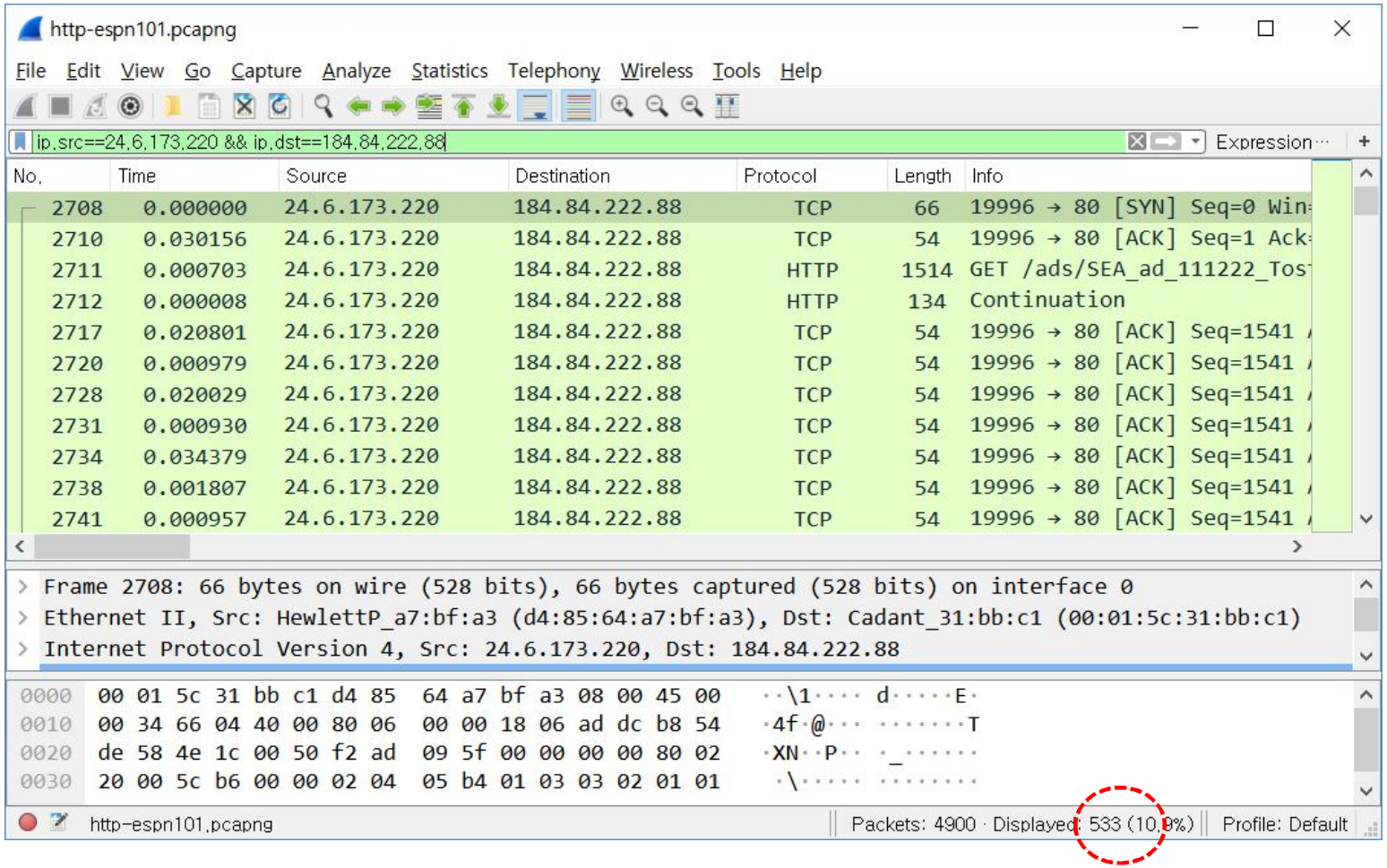
- Apply as Filter
  - Selected
    - A ↔ B
    - A → B
    - B → A
    - A ↔ Any
    - A → Any
    - Any → A
    - Any ↔ B
    - Any → B
    - B → Any
  - Not Selected
  - ...and Selected
  - ...or Selected
  - ...and not Selected
  - ...or not Selected
- Prepare a Filter
- Find
- Colorize

❷ Statistics > Conversation Filter

- Packets 필드를 기준으로 내림 차순으로 정렬
- 첫 번째 패킷 선택
- 오른쪽 마우스 클릭 > Apply as Filter > Selected > A→ B



❷ Statistics > Conversation Filter



[참고] Endpoints

Statistics > Endpoints

Wireshark · Endpoints · http-espn101.pcapng

Ethernet · 2 | IPv4 · 38 | IPv6 | TCP · 100 | UDP · 83

Address	Packets	Bytes	Tx Packets	Tx Bytes	Rx Packets	Rx Bytes	Country	City	AS Number	AS Organization
24.6.173.220	4,900	4490 k	1,700	201 k	3,200	4288 k	—	—	—	—
184.84.222.88	1,855	2020 k	1,322	1989 k	533	30 k	—	—	—	—
184.84.222.48	720	649 k	455	605 k	265	43 k	—	—	—	—
184.84.222.120	613	628 k	418	614 k	195	14 k	—	—	—	—
184.84.222.10	371	382 k	252	374 k	119	7502	—	—	—	—
184.84.222.152	303	286 k	193	261 k	110	25 k	—	—	—	—
75.75.75.75	180	22 k	90	15 k	90	6973	—	—	—	—
74.125.224.59	142	115 k	91	105 k	51	9643	—	—	—	—
68.71.216.157	132	20 k	66	16 k	66	3672	—	—	—	—
68.71.216.176	127	134 k	89	127 k	38	7147	—	—	—	—
184.84.222.16	41	36 k	26	35 k	15	1768	—	—	—	—
50.17.254.18	37	7626	15	1989	22	5637	—	—	—	—
184.84.222.75	36	33 k	24	32 k	12	1602	—	—	—	—
138.108.7.20	31	24 k	20	23 k	11	1675	—	—	—	—
184.84.222.137	30	19 k	16	17 k	14	1638	—	—	—	—
68.71.216.171	29	24 k	17	23 k	12	1007	—	—	—	—
96.17.110.92	25	8423	12	4121	13	4302	—	—	—	—
96.17.148.114	24	13 k	12	10 k	12	3575	—	—	—	—
96.17.110.102	17	2650	6	672	11	1978	—	—	—	—
66.235.138.59	15	7482	7	2816	8	4666	—	—	—	—

Name resolution | Limit to display filter | Endpoint Types

Copy | Map | 닫기 | 도움말

3. 그외 기능들

❶ **스트림 따라가기**(Stream Follow)

- 여러 패킷의 데이터를 통합해 쉽게 읽을 수 있는 형식으로 재구성 (재조립)
- 4가지 유형의 스트림

  - TCP stream

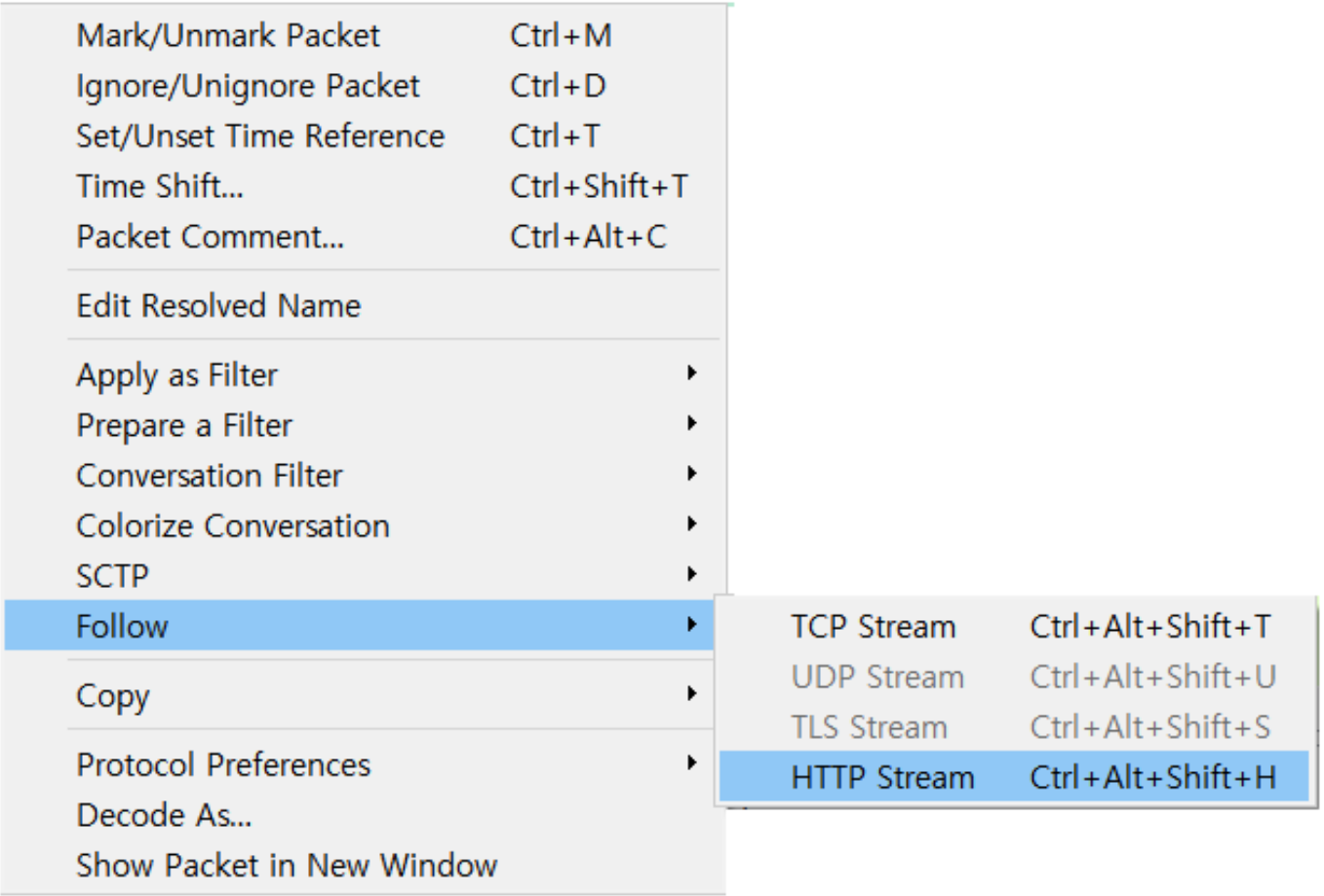
  - UDP Stream

  - SSL Stream

  - HTTP Stream

* 단일 TCP나 UDP 대화 필터링

TCP 또는 HTTP 패킷 선택 > 오른쪽 마우스 클릭 > Follow > HTTP Stream



Wireshark · Follow HTTP Stream (tcp.stream eq 0) · http-espn101.pcapng

```
GET / HTTP/1.1
Accept: application/x-ms-application, image/jpeg, application/xaml+xml, image/gif, image/pjpeg,
application/x-ms-xbap, application/vnd.ms-excel, application/vnd.ms-powerpoint, application/
msword, */*
Accept-Language: en-US
User-Agent: Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 6.1; WOW64; Trident/4.0; GTB7.2; SLCC2;
.NET CLR 2.0.50727; .NET CLR 3.5.30729; .NET CLR 3.0.30729; Media Center PC 6.0; HPDTDF;
.NET4.0C; InfoPath.3; MS-RTC LM 8; BRI/2)
Accept-Encoding: gzip, deflate
Host: www.espn.com
Connection: Keep-Alive

HTTP/1.1 301 Moved Permanently
Date: Sat, 07 Jan 2012 21:59:44 GMT
Server: Apache
Location: http://espn.go.com/
Content-Length: 227
X-Cnection: close
Content-Type: text/html; charset=iso-8859-1

<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="http://espn.go.com/">here</a>.</p>
</body></html>
```

1 client pkt(s), 1 server pkt(s), 1 turn(s).

Entire conversation (979 bytes) | Show and save data as ASCII

Find: | Find Next

Filter Out This Stream | Print | Save as… | Back | 닫기 | 도움말

http-espn101.pcapng

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

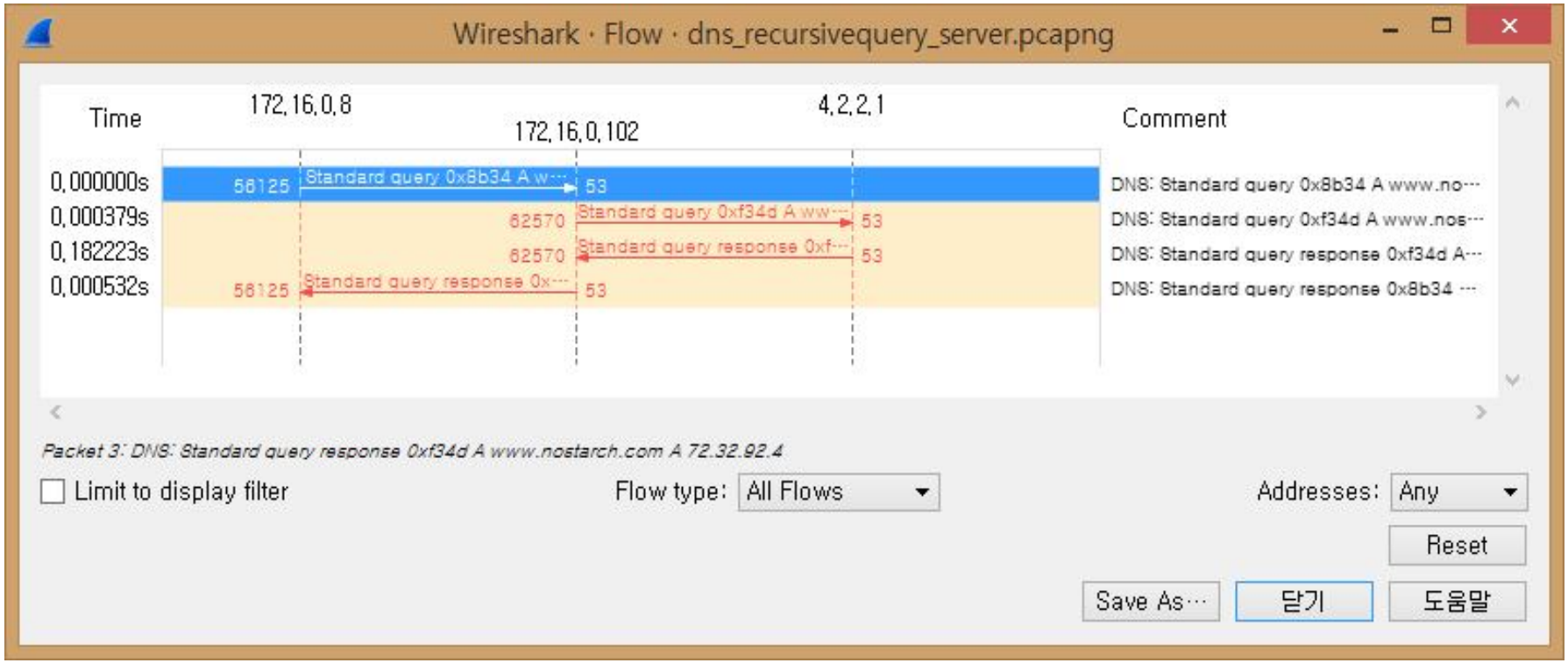
tcp.stream eq 0

No.	Time	Source	Destination	Protocol	Length	Info
5	0.000000	24.6.173.220	199.181.132.250	TCP	66	19941 → 80 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=
6	0.031335	199.181.132.250	24.6.173.220	TCP	66	80 → 19941 [SYN, ACK] Seq=0 Ack=1 Win=4380 Len=0 M
7	0.000126	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [ACK] Seq=1 Ack=1 Win=65700 Len=0
8	0.000665	24.6.173.220	199.181.132.250	HTTP	603	GET / HTTP/1.1
9	0.041099	199.181.132.250	24.6.173.220	HTTP	484	HTTP/1.1 301 Moved Permanently (text/html)
31	0.199860	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [ACK] Seq=550 Ack=431 Win=65268 Len=0
4891	68.873340	24.6.173.220	199.181.132.250	TCP	54	19941 → 80 [RST, ACK] Seq=550 Ack=431 Win=0 Len=0

❷ 흐름 그래프

- 흐름 그래프는 호스트 간의 연결에 대한 열-기반 보기를 포함
- dns_recursivequery_server.pacpng 열기 > 두번째 패킷 선택

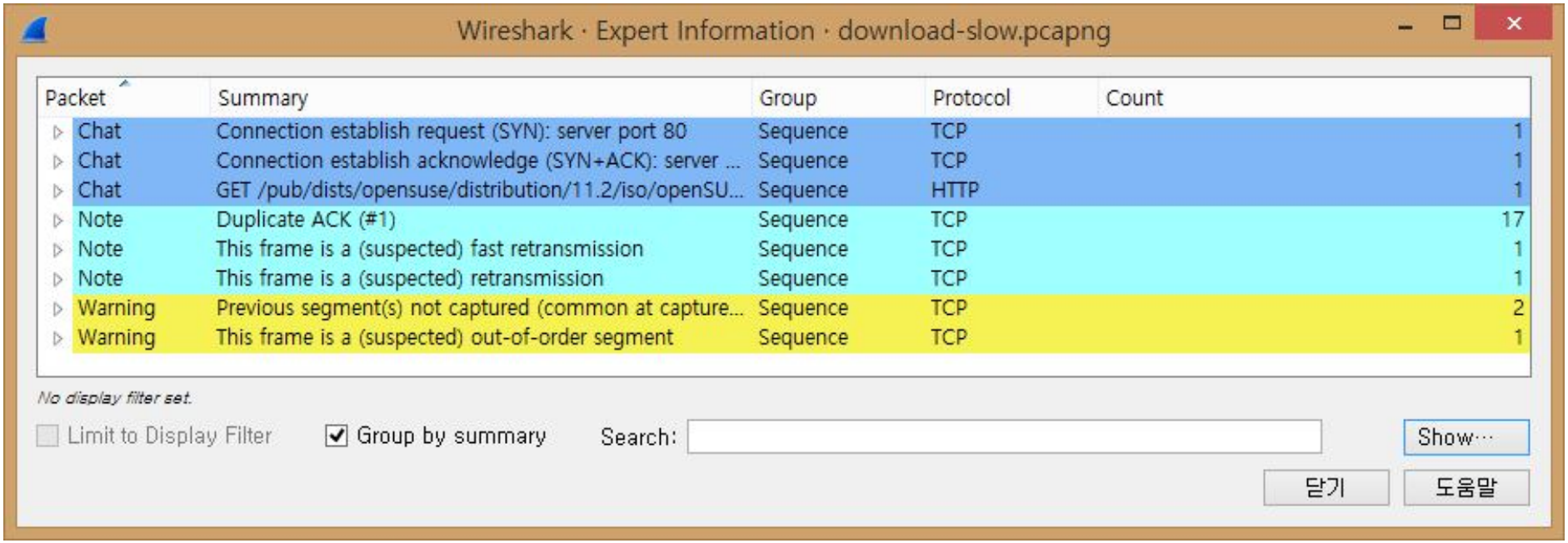
  > Statistics > TCP Stream Graphs > Round Trip Time Graph



❸ 전문가 정보

◦ 프로토콜 패킷 내의 특정 상태나 캡처 파일 문제 해결 시 유용

- Chat : 통신에 대한 기본 정보
- Note : 정상적인 통신의 일부 일수 있는 비정상적인 패킷
- Warning : 대부분 정상 통신이 아닌 비정상적인 패킷
- Error : 패킷 또는 분석기가 해석하는 중 오류 발생



Packet	Summary	Group	Protocol	Count
Chat	Connection establish request (SYN): server port 80	Sequence	TCP	1
Chat	Connection establish acknowledge (SYN+ACK): server ...	Sequence	TCP	1
Chat	GET /pub/dists/opensuse/distribution/11.2/iso/openSU...	Sequence	HTTP	1
Note	Duplicate ACK (#1)	Sequence	TCP	17
Note	This frame is a (suspected) fast retransmission	Sequence	TCP	1
Note	This frame is a (suspected) retransmission	Sequence	TCP	1
Warning	Previous segment(s) not captured (common at capture...	Sequence	TCP	2
Warning	This frame is a (suspected) out-of-order segment	Sequence	TCP	1

❹ 트래픽 통계

* Statistics >Packet Lengths

- 대용량 캡처 파일의 구성을 이해하고자 할 때 유용
- 길이에 따라 패킷 분포를 확인

Wireshark · Packet Lengths · download-slow.pcapng

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
Packet Lengths	10728	988.99	54	1460	0.0614	100%	0.2100	69.617
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	3587	54.07	54	66	0.0205	33.44%	0.0700	31.017
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	1	634.00	634	634	0.0000	0.01%	0.0100	0.178
640-1279	13	761.08	756	822	0.0001	0.12%	0.0400	0.921
1280-2559	7127	1460.00	1458	1460	0.0408	66.43%	0.1400	69.617
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: Enter a display filter ··· Apply

Copy Save as··· 닫기

- 길이가 긴 패킷이 66.43% 차지, 짧은 길의 패킷은 33.44%

*Statistics > Protocol Hierarchy

Wireshark · Protocol Hierarchy Statistics · http_espn.pcapng

Protocol	Percent Packets	Packets	Percent Bytes	Bytes	Bits/s	End Packets	End Bytes	End Bits/s
Frame	100.0	956	100.0	652181	2548 k	0	0	0
Ethernet	100.0	956	2.1	13384	52 k	0	0	0
Internet Protocol Version 4	100.0	956	2.9	19120	74 k	0	0	0
User Datagram Protocol	2.9	28	0.0	224	875	0	0	0
Domain Name System	2.9	28	0.3	2017	7880	28	2017	7880
Transmission Control Protocol	97.1	928	94.7	617436	2412 k	426	14032	54 k
Hypertext Transfer Protocol	52.5	502	90.1	587338	2294 k	441	517225	2020 k
Unreassembled Fragmented Packet	0.1	1	0.0	0	0	1	0	0
Portable Network Graphics	1.5	14	1.3	8607	33 k	8	3064	11 k
Unreassembled Fragmented Packet	0.6	6	0.0	0	0	6	0	0
Media Type	0.3	3	0.4	2741	10 k	3	2741	10 k
Line-based text data	1.5	14	2.3	15259	59 k	14	15259	59 k
JPEG File Interchange Format	1.9	18	2.5	16201	63 k	13	11575	45 k
Unreassembled Fragmented Packet	0.5	5	0.0	0	0	5	0	0
eXtensible Markup Language	0.2	2	0.9	5868	22 k	2	5868	22 k
Compuserve GIF	0.9	9	0.8	4946	19 k	5	1254	4899
Unreassembled Fragmented Packet	0.4	4	0.0	0	0	4	0	0

- **Statistics > Conversation**

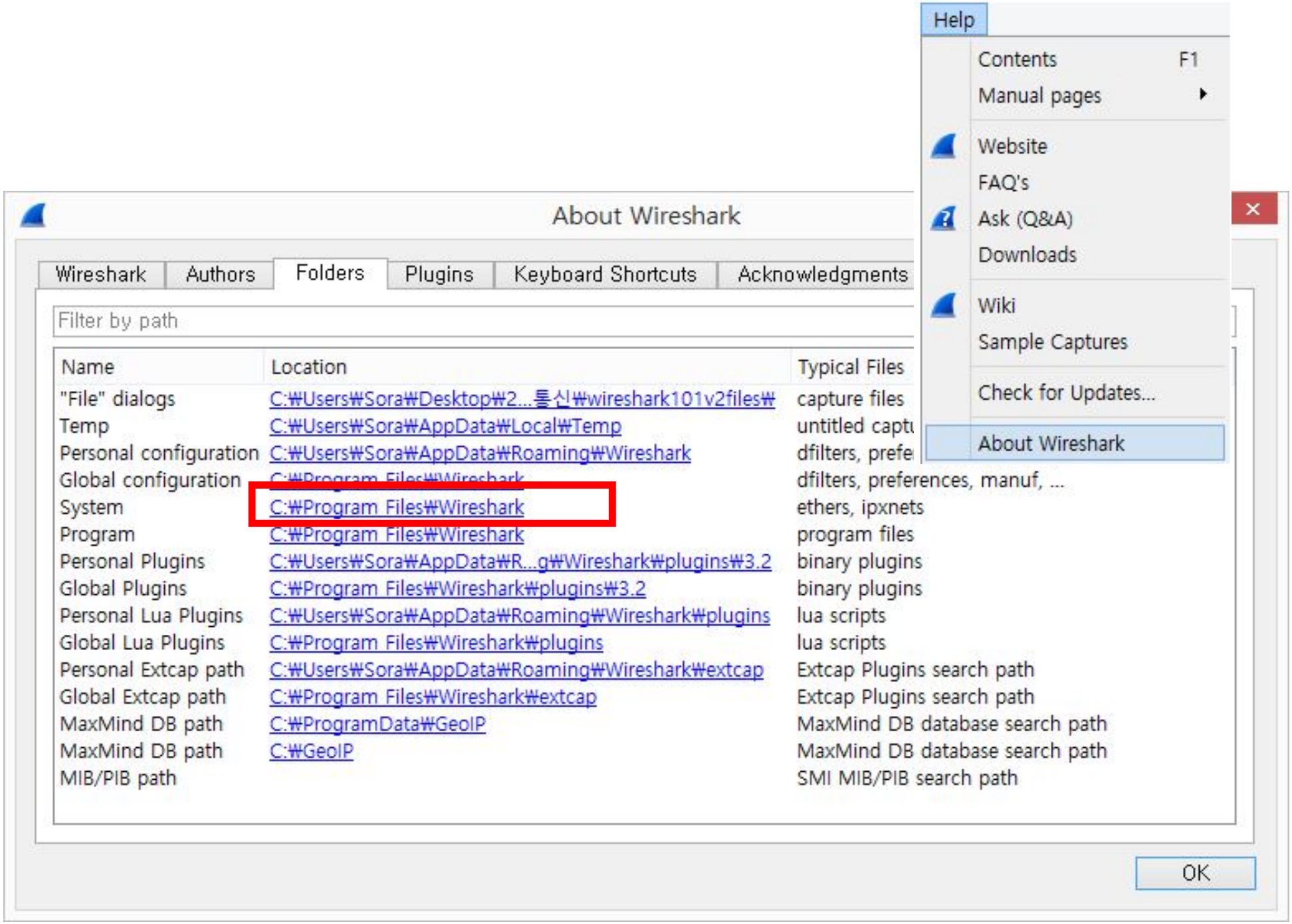
Wireshark · Conversations · http_espn_fail.pcapng

Ethernet · 1 | IPv4 · 8 | IPv6 | TCP · 16 | UDP · 7

Address A	Address B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	Bits/s A → B	Bits/s B → A
172.16.16.154	4.2.2.1	14	1627	7	521	7	1106	0.000000	0.6639	6278	
172.16.16.154	68.71.212.158	13	2032	7	832	6	1200	0.027167	90.8752	73	
172.16.16.154	199.181.133.61	61	49 k	24	1953	37	47 k	0.238547	91.0836	171	
172.16.16.154	203.0.113.94	93	6774	93	6774	0	0	0.430071	94.5936	572	
172.16.16.154	72.21.91.8	92	70 k	43	3170	49	67 k	0.526867	60.5532	418	
172.16.16.154	72.246.56.35	247	196 k	113	8315	134	188 k	0.527902	90.8063	732	
172.16.16.154	69.31.75.194	19	9949	9	1007	10	8942	0.579477	90.6593	88	
172.16.16.154	72.246.56.83	30	20 k	15	1518	15	19 k	0.659868	45.3449	267	

4. Tshark

	LINUX	MS-Window
패킷수집	TCPdump	TShark
패킷분석	Wireshark	


Help
Contents F1
Manual pages
Website
FAQ's
Ask (Q&A)
Downloads
Wiki
Sample Captures
Check for Updates...
About Wireshark
About Wireshark
Wireshark
Authors
Folders
Plugins
Keyboard Shortcuts
Acknowledgments
Filter by path
Name
Location
Typical Files
"File" dialogs
C:₩Users₩Sora₩Desktop₩2...통신₩wireshark101v2files₩
capture files
Temp
C:₩Users₩Sora₩AppData₩Local₩Temp
untitled capt
Personal configuration
C:₩Users₩Sora₩AppData₩Roaming₩Wireshark
dfilters, prefe
Global configuration
dfilters, preferences, manuf, ...
System
C:₩Program Files₩Wireshark
ethers, ipxnets
Program
C:₩Program Files₩Wireshark
program files
Personal Plugins
C:₩Users₩Sora₩AppData₩R...g₩Wireshark₩plugins₩3.2
binary plugins
Global Plugins
C:₩Program Files₩Wireshark₩plugins₩3.2
binary plugins
Personal Lua Plugins
C:₩Users₩Sora₩AppData₩Roaming₩Wireshark₩plugins
lua scripts
Global Lua Plugins
C:₩Program Files₩Wireshark₩plugins
lua scripts
Personal Extcap path
C:₩Users₩Sora₩AppData₩Roaming₩Wireshark₩extcap
Extcap Plugins search path
Global Extcap path
C:₩Program Files₩Wireshark₩extcap
Extcap Plugins search path
MaxMind DB path
C:₩ProgramData₩GeoIP
MaxMind DB database search path
MaxMind DB path
C:₩GeoIP
MaxMind DB database search path
MIB/PIB path
SMI MIB/PIB search path
OK

내 PC ▸ 로컬 디스크 (C:) ▸ Program Files ▸ Wireshark ▸

audio	capinfos.exe	gmodule-2.dll	libp11-kit-0.dll	nghttp2.dll	text2pcap.exe
bearer	capinfos.html	gthread-2.dll	libsbc-1.dll	npcap-0.9986.exe	text2pcap.html
diameter	cares.dll	init.lua	libsmi-2.dll	opengl32sw.dll	tshark.exe
dtds	cfilters	ipmap.html	libsnappy-1.dll	pcre.dll	tshark.html
extcap	colorfilters	k5sprt64.dll	libspandsp-2.dll	pdml2html.xsl	uninstall.exe
iconengines	comerr64.dll	krb5_64.dll	libssh.dll	Qt5Core.dll	user-guide.chm
imageformats	console.lua	libbcg729.dll	libtasn1-6.dll	Qt5Gui.dll	WinSparkle.dll
mediaservice	COPYING.txt	libcharset.dll	libwinpthread-1.dll	Qt5Multimedia.dll	Wireshark.exe
platforms	d3dcompiler_47.dll	libEGL.dll	libwireshark.dll	Qt5Network.dll	wireshark.html
playlistformats	dfilters	libffi-6.dll	libwiretap.dll	Qt5PrintSupport.dll	wireshark-filter.html
plugins	dftest.exe	libgcc_s_seh-1.dll	libwsutil.dll	Qt5Svg.dll	wka
printsupport	dftest.html	libgcrypt-20.dll	libxml2.dll	Qt5Widgets.dll	ws.css
profiles	dtd_gen.lua	libGLESV2.dll	lua52.dll	Qt5WinExtras.dll	zlib1.dll
radius	dumpcap.exe	libgmp-10.dll	lz4.dll	rawshark.exe	zstd.dll
snmp	dumpcap.html	libgnutls-30.dll	lzma.dll	rawshark.html	
styles	editcap.exe	libgpg-error-0.dll	manuf	README.txt	
tpncp	editcap.html	libhogweed-4.dll	mergecap.exe	README.windows.txt	
wimaxasncp	enterprises.tsv	libiconv.dll	mergecap.html	reordercap.exe	
AUTHORS-SHORT	extcap.html	libintl.dll	mmdbresolve.exe	reordercap.html	
brotlicommon.dll	faq.html	libmaxminddb-0.dll	mmdbresolve.html	services	
brotlidec.dll	glib-2.dll	libnettle-6.dll	NEWS.txt	smi_modules	

커맨드라인에서 트래픽 수집

- dumpcap.exe나 tshark.exe를 이용해 커맨드 라인으로 트래픽 수집

  - Tshark를 구동하면 dumpcap.exe를 호출해서 수집 기능을 활용

```
C:₩Program Files₩Wireshark>dir dumpcap.exe

 C:₩Program Files₩Wireshark 디렉터리

2020-02-27  오전 05:47            420,416 dumpcap.exe
               1개 파일              420,416 바이트
               0개 디렉터리  86,740,180,992 바이트 남음

C:₩Program Files₩Wireshark>dir tshark.exe

 C:₩Program Files₩Wireshark 디렉터리

2020-02-27  오전 05:47            582,720 tshark.exe
               1개 파일              582,720 바이트
               0개 디렉터리  86,740,180,992 바이트 남음
```

❶ tshark –h

```
C:\Program Files\Wireshark>tshark -h
TShark (Wireshark) 3.0.3 (v3.0.3-0-g6130b92b0ec6)
Dump and analyze network traffic.
See https://www.wireshark.org for more information.

Usage: tshark [options] ...
```

❷ tshark –D

```
C:\Program Files\Wireshark>tshark -D
1. \Device\NPF_{5256CF9B-1707-460C-B397-669CE852CFDE}
2. \Device\NPF_{A378EED4-AC87-4168-8B22-DFDD0B9EC62E}
3. \Device\NPF_{557124E1-28F6-4C2F-BDCE-1DFD75D011CE} (Wi-Fi)
4. \Device\NPF_{630C09BF-1CAB-457F-978E-7A0BBEE76CF5}
5. \Device\NPF_{E8E017EF-FC6D-4933-BD98-9AEC5CB26CF6}
6. \Device\NPF_{27056470-1B11-4C61-8E92-0B25B7CB57C9}
7. \Device\NPF_{DFBA2BCB-8989-40B4-873C-8CF862935F18}
8. \Device\NPF_{6EC32DD5-41B3-45FF-B701-BB15DC1E7E45}
9. \Device\NPF_{23E2556A-B636-483F-A13E-C3E889DD3825}
10. \Device\NPF_{415D90F5-DFA5-426C-ABFE-BCCAB1542370}
```

❸ tshark –i 3

```
C:\Program Files\Wireshark>tshark -i 3
Capturing on 'Wi-Fi'
    1   0.000000 192.168.35.145 → 69.167.144.15 66 65160 64020 → https(443) [SYN] Seq=0 Win=65160 Len=0 MSS=1460 WS=256 SACK_PERM=1
    2   3.816065 192.168.35.145 → 121.53.202.218 66 65535 64021 → https(443) [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
    3   3.816070 192.168.35.145 → 121.53.202.218 66 65535 64022 → https(443) [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
    4   3.818776 121.53.202.218 → 192.168.35.145 66 8190 https(443) → 64022 [SYN, ACK] Seq=0 Ack=1 Win=8190 Len=0 MSS=1460 WS=16 SACK_PERM=1
    5   3.818895 192.168.35.145 → 121.53.202.218 54 1024 64022 → https(443) [ACK] Seq=1 Ack=1 Win=262144 Len=0
    6   3.819200 121.53.202.218 → 192.168.35.145 66 8190 https(443) → 64021 [SYN, ACK] Seq=0 Ack=1 Win=8190 Len=0 MSS=1460 WS=16 SACK_PERM=1
    7   3.819311 192.168.35.145 → 121.53.202.218 54 1024 64021 → https(443) [ACK] Seq=1 Ack=1 Win=262144 Len=0
    8   3.819713 192.168.35.145 → 121.53.202.218 295 1024 Client Hello
    9   3.819864 192.168.35.145 → 121.53.202.218 295 1024 Client Hello
```

* Ctrl+C 로 중단

❹ tshark –i 3 –w TST.pcapng

```
C:\Program Files\Wireshark>tshark -i 3 -w TST.pcapng
Capturing on 'Wi-Fi'
2472

C:\Program Files\Wireshark>
```

❺ tshark –r TST.pcapng

```
C:\Program Files\Wireshark>tshark -r TST.pcapng
    1   0.000000 192.168.35.145 → 69.167.144.15 74 65160 64159 → ht
    2   0.749769 192.168.35.145 → 104.74.232.184 54 256 64153 → htt
    3   0.752502 104.74.232.184 → 192.168.35.145 54 237 http(80) →
    4   0.752540 192.168.35.145 → 104.74.232.184 54 256 64153 → htt
    5   1.055385 192.168.35.145 → 110.76.141.124 66 64240 64160 → h
    6   1.058892 110.76.141.124 → 192.168.35.145 66 29200 https(443)
    7   1.058938 192.168.35.145 → 110.76.141.124 54 256 64160 → htt
    8   1.059047 192.168.35.145 → 110.76.141.124 256 256 Client Hell
```

❻ tshark –i 3 –a files:3 –b duration:10 –w myshark.pcapng

```
C:\Program Files\Wireshark>tshark -i 3 -a files:3 -b duration:10 -w myshark.pcapng
Capturing on 'Wi-Fi'
4464

C:\Program Files\Wireshark>dir myshark*
 C 드라이브의 볼륨에는 이름이 없습니다.
 볼륨 일련 번호: BCF8-FA59

 C:\Program Files\Wireshark 디렉터리

2018-08-12  오전 12:46          679,312 myshark_00001_20190801004608.pcapng
2018-08-12  오전 12:46        1,269,276 myshark_00002_20190801004618.pcapng
2018-08-12  오전 12:46          937,040 myshark_00003_20190801004629.pcapng
               3개 파일          2,885,628 바이트
               0개 디렉터리  126,970,032,128 바이트 남음
```

-a file:3 3개 파일 수집 후 자동 정지

-b duration:10 10초 후에 다음 파일을 생성

-w myshark.pcapng 추적파일명

커맨드라인 수집 과정에서 수집 필터(캡처필터)

❶ **tshark –i 3 –f "tcp port 443" –w mysecport443.pcapng**

```
C:\Program Files\Wireshark>tshark -i 3 -f "tcp port 443" -w mysecport443.pcapng
Capturing on 'Wi-Fi'
2734

C:\Program Files\Wireshark>tshark -r mysecport443.pcapng
    1   0.000000 192.168.35.145 → 69.167.144.15 74 65160 64805 → https(443) [SYN] Seq=0 W
    2   3.010265 192.168.35.145 → 69.167.144.15 74 65160 [TCP Retransmission] 64805 → htt
    3   3.627403 192.168.35.145 → 52.175.23.79 66 64240 64806 → https(443) [SYN] Seq=0 Wi
    4   3.710985 52.175.23.79 → 192.168.35.145 66 8192 https(443) → 64806 [SYN, ACK] Seq=
    5   3.711076 192.168.35.145 → 52.175.23.79 54 258 64806 → https(443) [ACK] Seq=1 Ack=
    6   3.711563 192.168.35.145 → 52.175.23.79 274 258 Client Hello
    7   3.792328 52.175.23.79 → 192.168.35.145 1514 1026 [TCP segment of a reassembled PDU
    8   3.792330 52.175.23.79 → 192.168.35.145 1514 1026 https(443) → 64806 [ACK] Seq=146
    9   3.792335 52.175.23.79 → 192.168.35.145 538 1026 Server Hello, Certificate, Server
```

❷ **tshark –i 3 –f "tcp port 443 and host 192.168.1.1" –w my443.pcapng**

커맨드라인 수집 과정에서 디스플레이 필터

❶ tshark –r “mysecport443.pcapng” –Y “tcp.analysis.flags”

```
C:\Program Files\Wireshark>tshark -r "mysecport443.pcapng" -Y "tcp.analysis.flags"
    2   3.010265 192.168.35.145 → 69.167.144.15 74 65160 [TCP Retransmission] 64805 → https(443)
 1113   9.019700 192.168.35.145 → 69.167.144.15 66 65160 [TCP Retransmission] 64805 → https(443)
 2734  24.038230 192.168.35.145 → 69.167.144.15 74 65160 [TCP Retransmission] 64898 → https(443)
```

❷ tshark –r “mysecport443.pcapng” –Y “tcp.analysis.flags” –w tcpflag.pcapng

❸ tshark –r “mysecport443.pcapng” –Y “http.request.method == GET”

❹ tshark –i 3 –qz hosts

접속한 호스트 목록 확인

```
C:₩Program Files₩Wireshark>tshark -i3 -qz hosts
Capturing on 'Wi-Fi'
5681 packets captured
# TShark hosts output
#
# Host data gathered from the temporary capture file

125.209.222.142 www.naver.com.nheos.com
125.209.254.155 s1.e.navercdn.com
43.250.152.43   s2.e.navercdn.com
210.89.172.40   kr-lcs.naver.com.akadns.net
125.209.210.116 kr-cc.naver.com.akadns.net
13.107.21.200   dual-a-0001.a-msedge.net
125.209.254.162 s1.e.navercdn.com
168.63.154.101  wd-prod-ss-as-east-2-fe.eastasia.cloudapp.azure.com
125.209.230.195 l.www.naver.com
43.250.152.50   s2.e.navercdn.com
```

Wireshark · Expert Information · http-download101c.pcapng

Severity	Summary	Group	Protocol	Count
Warning	TCP Zero Window segment	Sequence	TCP	
Warning	TCP window specified by the receiver is now comple...	Sequence	TCP	
Warning	Connection reset (RST)	Sequence	TCP	
Note	Duplicate ACK (#1)	Sequence	TCP	
Note	This frame is a (suspected) retransmission	Sequence	TCP	
Chat	TCP window update	Sequence	TCP	
Chat	Connection finish (FIN)	Sequence	TCP	
Chat	GET /api/supported-services.json HTTP/1.1₩r₩n	Sequence	HTTP	
Chat	Connection establish acknowledge (SYN+ACK): serv...	Sequence	TCP	
Chat	Connection establish request (SYN): server port 80	Sequence	TCP	

❺ tshark –r “http-download101c.pcapng” –qz expert,warns

```
C:\Program Files\Wireshark>tshark -r "mysecport443.pcapng" -qz expert.warns

Warns (30)
=============
   Frequency      Group           Protocol  Summary
          30   Sequence                TCP  Connection reset (RST)

Notes (35)
=============
   Frequency      Group           Protocol  Summary
           3   Sequence                TCP  This frame is a (suspected) retransmission
          32   Sequence                TLS  This session reuses previously negotiated keys (Session resumption)

Chats (271)
=============
   Frequency      Group           Protocol  Summary
          96   Sequence                TCP  Connection establish request (SYN): server port 443
          91   Sequence                TCP  Connection establish acknowledge (SYN+ACK): server port 443
          84   Sequence                TCP  Connection finish (FIN)
```

❻ tshark -i 3 –Y “http.host” –T fields –e http.host > httphosts.txt

실시간으로 관찰된 특정 필드 값을 텍스트 파일로 저장

```
▷ Transmission Control Protocol
◢ Hypertext Transfer Protocol
  ▷ GET /api/supported-services.json HTTP/1
    Host: www.longurlplease.com\r\n
    User-Agent: Mozilla/5.0 (Windows NT 6.1
    Accept: text/html,application/xhtml+xml
    Accept-Language: en-US,en;q=0.5\r\n
    Accept-Encoding: gzip, deflate\r\n
    Connection: keep-alive\r\n
    \r\n
    [Full request URI: http://www.longurlpl
    [HTTP request 1/1]
    [Response in frame: 8]

0060  0a 48 6f 73 74 3a 20 77  77 77 2e 6c
0070  72 6c 70 6c 65 61 73 65  2e 63 6f 6d

HTTP Host (http.host), 29 byte(s)
```

```
httphosts.txt - 메모장
파일(F)  편집(E)  서식(O)  보기(V)  도움말(H)
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
239.255.255.250:1900
```

❹ tshark –i 3 –qz hosts