

Evaluation Sheet

Class: T.E Computer Engineering

Sem: VI

Subject: Cryptography and System Security

Experiment No: 10

Date:

Title of Experiment: Study of packet sniffer wireshark: 1. Download and install wireshark and capture icmp, tcp, and http packets in promiscuous mode. 2. Explore how the packets can be traced based on different filters.

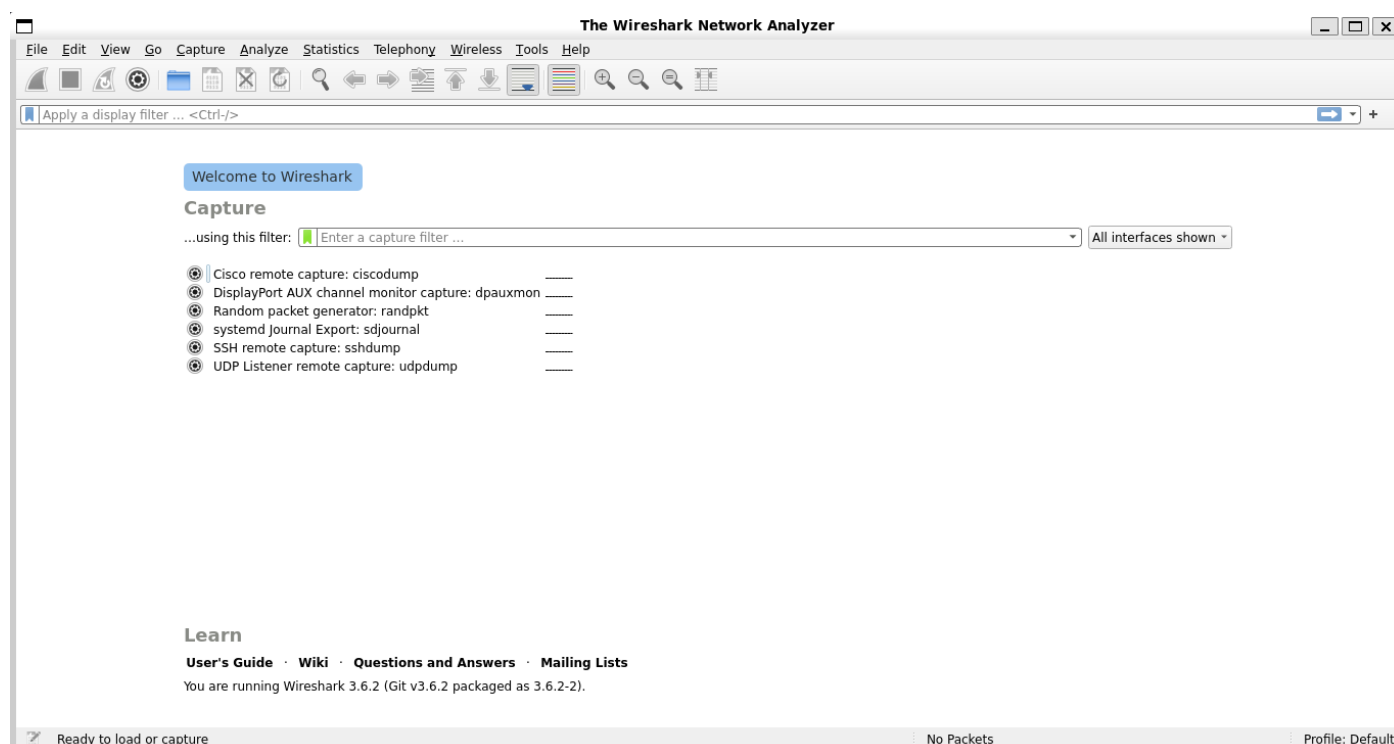
Sr. No.	Evaluation Criteria	Max Marks	Marks Obtained
1	Practical Performance	12	
2	Oral	2	
3	Timely Submission	1	
	Total	15	

Signature of Subject Teacher
[Vijesh M.Nair]

Installation of wireshark

```
onworks@onworks-Standard-PC-i440FX-PIIX-1996: ~  
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ sudo apt-get install wireshark  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
  linux-headers-4.15.0-45 linux-headers-4.15.0-45-generic  
  linux-image-4.15.0-45-generic linux-modules-4.15.0-45-generic  
  linux-modules-extra-4.15.0-45-generic  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  libc-ares2 libmaxminddb0 libnghttp2-14 libnl-route-3-200 libqgsttools-p1  
  libqt5multimedia5-plugins libqt5multimediawidgets5 libsmi2ldbl libsnappy1v5  
  libspandsp2 libssh-gcrypt-4 libwireshark-data libwireshark11 libwiretap8  
  libwscodec2 libwsutil9 wireshark-common wireshark-gtk wireshark-qt  
Suggested packages:  
  mmdns-bin snmp-mibs-downloader wireshark-doc  
The following NEW packages will be installed:  
  libc-ares2 libmaxminddb0 libnghttp2-14 libnl-route-3-200 libqgsttools-p1  
  libqt5multimedia5-plugins libqt5multimediawidgets5 libsmi2ldbl libsnappy1v5  
  libspandsp2 libssh-gcrypt-4 libwireshark-data libwireshark11 libwiretap8  
  libwscodec2 libwsutil9 wireshark wireshark-common wireshark-gtk  
  wireshark-qt  
0 upgraded, 20 newly installed, 0 to remove and 395 not upgraded.
```

Running wireshark



Wireshark Packet Capturing Interface

Capturing from Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.114.60	142.250.183.68	TLSv1.2	643	Application Data, Application Data
2	0.237030	142.250.183.68	192.168.114.60	TCP	54	443 → 54842 [ACK] Seq=1 Ack=590 Win=299 Len=0
3	0.241120	142.250.183.68	192.168.114.60	TLSv1.2	93	Application Data
4	0.264352	fe80::809b:e9ff:fe4...	fe80::2705:8b56:c31...	ICMPv6	86	Neighbor Solicitation for fe80::2705:8b56:c31c:292a from 82:9b:e9:47:1c:c6
5	0.264418	fe80::2705:8b56:c31...	fe80::809b:e9ff:fe4...	ICMPv6	86	Neighbor Advertisement fe80::2705:8b56:c31c:292a (sol, ovr) is at 2c:6e:85:a8:0e:67
6	0.268271	142.250.183.68	192.168.114.60	TLSv1.2	281	Application Data
7	0.268345	192.168.114.60	142.250.183.68	TCP	54	54842 → 443 [ACK] Seq=590 Ack=267 Win=253 Len=0
8	0.274196	192.250.183.68	192.168.114.60	TLSv1.2	85	Application Data
9	0.274456	142.250.183.68	192.168.114.60	TLSv1.2	93	Application Data
10	0.274539	192.168.114.60	142.250.183.68	TCP	54	54842 → 443 [ACK] Seq=590 Ack=337 Win=258 Len=0
11	0.275643	192.168.114.60	142.250.183.68	TLSv1.2	93	Application Data
12	0.309070	142.250.183.68	192.168.114.60	TCP	54	443 → 54842 [ACK] Seq=337 Ack=629 Win=299 Len=0
13	0.987946	192.168.114.60	142.250.183.68	TLSv1.2	231	Application Data
14	1.000773	192.168.114.60	142.250.183.68	TCP	54	54841 → 443 [FIN, ACK] Seq=1 Ack=1 Win=0 Len=0
15	1.001864	192.168.114.60	192.168.114.108	TCP	66	54852 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
16	1.002220	192.168.114.60	192.168.114.108	TCP	66	54853 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
17	1.002531	192.168.114.60	192.168.114.108	TCP	66	54854 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM
18	1.031998	142.250.183.68	192.168.114.60	TCP	54	443 → 54842 [ACK] Seq=337 Ack=806 Win=309 Len=0
19	1.034983	192.168.114.108	192.168.114.60	TCP	66	53 → 54852 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512
20	1.035089	192.168.114.60	192.168.114.108	TCP	54	54852 → 53 [ACK] Seq=1 Ack=1 Win=65536 Len=0
21	1.035221	192.168.114.60	192.168.114.108	TCP	56	54852 → 53 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=2 [TCP segment of a reassembled PDU]
22	1.035225	192.168.114.108	192.168.114.60	TCP	66	53 → 54853 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512
23	1.035225	192.168.114.108	192.168.114.60	TCP	66	53 → 54854 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512
24	1.035298	192.168.114.60	192.168.114.108	DNS	88	Standard query 0xcha0. A sites.google.com

> Frame 1: 643 bytes on wire (5144 bits), 643 bytes captured (5144 bits) on interface \Device\NPF...

> Ethernet II, Src: IntelCor_a8:0e:67 (2c:6e:85:a8:0e:67), Dst: 82:9b:e9:47:1c:c6 (82:9b:e9:47:1c:c6)

> Internet Protocol Version 4, Src: 192.168.114.60, Dst: 142.250.183.68

> Transmission Control Protocol, Src Port: 54842, Dst Port: 443, Seq: 1, Ack: 1, Len: 589

> Transport Layer Security

Wi-Fi: <live capture in progress>

Packets: 1145 · Displayed: 1145 (100.0%)

Profile: Default

Capturing HTTP GET Requests

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

http.request.method == GET

No.	Time	Source	Destination	Protocol	Length	Info
1718	44.162706	192.168.114.60	23.56.101.104	HTTP	336	GET /msdownload/update/v3/static/trustedr/en/pinrulesstl.cab?da52c0bee947070e HTTP/1.1
1766	51.389770	192.168.114.60	23.56.101.104	HTTP	335	GET /msdownload/update/v3/static/trustedr/en/authrootstl.cab?56145e447cf0b691 HTTP/1.1
1770	51.564063	192.168.114.60	23.56.101.104	HTTP	336	GET /msdownload/update/v3/static/trustedr/en/pinrulesstl.cab?fea97c1feaae8554 HTTP/1.1
1781	51.784406	192.168.114.60	118.214.137.233	HTTP	281	GET / HTTP/1.1

> Frame 1718: 336 bytes on wire (2688 bits), 336 bytes captured (2688 bits) on interface \Device\NPF...

> Ethernet II, Src: IntelCor_a8:0e:67 (2c:6e:85:a8:0e:67), Dst: 82:9b:e9:47:1c:c6 (82:9b:e9:47:1c:c6)

> Internet Protocol Version 4, Src: 192.168.114.60, Dst: 23.56.101.104

> Transmission Control Protocol, Src Port: 54920, Dst Port: 80, Seq: 1, Ack: 1, Len: 282

> Hypertext Transfer Protocol

wireshark_WI-FIGSMQ21.pcapng

Packets: 2292 · Displayed: 4 (0.2%)

Profile: Default

Capturing HTTP Response

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

http.response

No.	Time	Source	Destination	Protocol	Length	Info
1720	44.237927	23.56.101.104	192.168.114.60	HTTP	325	HTTP/1.1 304 Not Modified
1768	51.450890	23.56.101.104	192.168.114.60	HTTP	321	HTTP/1.1 304 Not Modified
1772	51.632793	23.56.101.104	192.168.114.60	HTTP	325	HTTP/1.1 304 Not Modified
1783	51.856781	118.214.137.233	192.168.114.60	HTTP	317	HTTP/1.1 304 Not Modified

> Frame 1720: 325 bytes on wire (2600 bits), 325 bytes captured (2600 bits) on interface \Device\NPF{...}

> Ethernet II, Src: 82:9b:e9:47:1c:c6 (82:9b:e9:47:1c:c6), Dst: IntelCor_a8:0e:67 (2c:6e:85:a8:67)

> Internet Protocol Version 4, Src: 23.56.101.104, Dst: 192.168.114.60

> Transmission Control Protocol, Src Port: 80, Dst Port: 54920, Seq: 1, Ack: 283, Len: 271

> Hypertext Transfer Protocol

Response: Boolean

Packets: 2365 · Displayed: 4 (0.2%)

Profile: Default

Capturing DNS Packets

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

dns

No.	Time	Source	Destination	Protocol	Length	Info
24	1.035298	192.168.114.60	192.168.114.108	DNS	88	Standard query 0xcba0 A sites.google.com
28	1.035570	192.168.114.60	192.168.114.108	DNS	88	Standard query 0x8ca3 HTTPS sites.google.com
30	1.035740	192.168.114.60	192.168.114.108	DNS	88	Standard query 0x85ed AAAA sites.google.com
50	1.280776	192.168.114.60	192.168.114.108	DNS	88	Standard query 0xd2e7 A sites.google.com
54	1.281194	192.168.114.60	192.168.114.108	DNS	88	Standard query 0xb600 AAAA sites.google.com
58	1.282244	192.168.114.60	192.168.114.108	DNS	88	Standard query 0xe232 HTTPS sites.google.com
69	1.449686	192.168.114.108	192.168.114.60	DNS	105	Standard query response 0xcba0 A sites.google.com A 142.250.77.46
75	1.463607	192.168.114.108	192.168.114.60	DNS	139	Standard query response 0x8ca3 HTTPS sites.google.com SOA ns1.google.com
82	1.495948	192.168.114.108	192.168.114.60	DNS	117	Standard query response 0x85ed AAAA sites.google.com AAAA 2404:6800:4009:826::200e
92	1.537309	192.168.114.108	192.168.114.60	DNS	105	Standard query response 0xd2e7 A sites.google.com A 142.250.77.46
97	1.558214	192.168.114.108	192.168.114.60	DNS	117	Standard query response 0xb600 AAAA sites.google.com AAAA 2404:6800:4009:826::200e
99	1.558500	192.168.114.108	192.168.114.60	DNS	139	Standard query response 0xe232 HTTPS sites.google.com SOA ns1.google.com
203	2.784160	192.168.114.60	192.168.114.108	DNS	80	Standard query 0xf90c A fonts.googleapis.com
204	2.786343	192.168.114.60	192.168.114.108	DNS	75	Standard query 0x15a7 A www.gstatic.com
212	2.806714	192.168.114.60	192.168.114.108	DNS	87	Standard query 0xe01d A apis.google.com
220	2.810575	192.168.114.60	192.168.114.108	DNS	87	Standard query 0xd8eb HTTPS apis.google.com
222	2.811662	192.168.114.60	192.168.114.108	DNS	87	Standard query 0x29f1 AAAA apis.google.com
229	2.838531	192.168.114.108	192.168.114.60	DNS	96	Standard query response 0xf90c A fonts.googleapis.com A 142.250.183.138
236	2.884348	192.168.114.108	192.168.114.60	DNS	91	Standard query response 0x15a7 A www.gstatic.com A 142.251.42.35
238	3.023235	192.168.114.60	192.168.114.108	DNS	85	Standard query 0x4052 A lh3.googleusercontent.com
246	3.082706	192.168.114.60	192.168.114.108	DNS	87	Standard query 0x7cae A apis.google.com
249	3.083008	192.168.114.60	192.168.114.108	DNS	87	Standard query 0xb4b7 AAAA apis.google.com
253	3.083762	192.168.114.60	192.168.114.108	DNS	87	Standard query 0xb1cb HTTPS apis.google.com
262	3.117117	192.168.114.108	192.168.114.60	DNS	130	Standard query response 0x4052 A lh3.googleusercontent.com CNAME googlehosted.l.googleusercontent.com A 142.250.183.138

> Frame 1714: 266 bytes on wire (2128 bits), 266 bytes captured (2128 bits) on interface \Device\NPF{...}

> Ethernet II, Src: 82:9b:e9:47:1c:c6 (82:9b:e9:47:1c:c6), Dst: IntelCor_a8:0e:67 (2c:6e:85:a8:67)

> Internet Protocol Version 4, Src: 192.168.114.108, Dst: 192.168.114.60

> User Datagram Protocol, Src Port: 53, Dst Port: 49979

> Domain Name System (response)

Domain Name System: Protocol

Packets: 2399 · Displayed: 150 (6.3%)

Profile: Default

Capturing TCP Port 80 and UDP Port 80

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port == 80 || udp.port == 80

No. Time Source Destination Protocol Length Info

1 0.000000 192.168.114.60 142.250.183.68 TLSv1.2 643 Application Data, Application Data

2 0.237030 142.250.183.68 192.168.114.60 TCP 54 443 → 54842 [ACK] Seq=1 Ack=590 Win=299 Len=0

3 0.241120 142.250.183.68 192.168.114.60 TLSv1.2 93 Application Data

6 0.268271 142.250.183.68 192.168.114.60 TLSv1.2 281 Application Data

7 0.268345 192.168.114.60 142.250.183.68 TCP 54 54842 → 443 [ACK] Seq=590 Ack=267 Win=253 Len=0

8 0.274196 142.250.183.68 192.168.114.60 TLSv1.2 85 Application Data

9 0.274456 142.250.183.68 192.168.114.60 TLSv1.2 93 Application Data

10 0.274539 192.168.114.60 142.250.183.68 TCP 54 54842 → 443 [ACK] Seq=590 Ack=337 Win=258 Len=0

11 0.275643 192.168.114.60 142.250.183.68 TLSv1.2 93 Application Data

12 0.309070 142.250.183.68 192.168.114.60 TCP 54 443 → 54842 [ACK] Seq=337 Ack=629 Win=299 Len=0

13 0.987946 192.168.114.60 142.250.183.68 TLSv1.2 231 Application Data

14 1.000773 192.168.114.60 142.250.183.68 TCP 54 54841 → 443 [FIN, ACK] Seq=1 Ack=1 Win=0 Len=0

15 1.001864 192.168.114.60 192.168.114.108 TCP 66 54852 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM

16 1.002220 192.168.114.60 192.168.114.108 TCP 66 54853 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM

17 1.002531 192.168.114.60 192.168.114.108 TCP 66 54854 → 53 [SYN] Seq=0 Win=64240 Len=0 MSS=1460 WS=256 SACK_PERM

18 1.031998 142.250.183.68 192.168.114.60 TCP 54 443 → 54842 [ACK] Seq=337 Ack=806 Win=309 Len=0

19 1.034983 192.168.114.108 192.168.114.60 TCP 66 53 → 54852 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512

20 1.035089 192.168.114.60 192.168.114.108 TCP 54 54852 → 53 [ACK] Seq=1 Ack=1 Win=65536 Len=0

21 1.035221 192.168.114.60 192.168.114.108 TCP 56 54852 → 53 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=2 [TCP segment of a reassembled PDU]

22 1.035225 192.168.114.60 192.168.114.60 TCP 66 53 → 54853 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512

23 1.035225 192.168.114.108 192.168.114.60 TCP 66 53 → 54854 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 SACK_PERM WS=512

24 1.035298 192.168.114.60 192.168.114.108 DNS 88 Standard query 0xcba0 A sites.google.com

25 1.035377 192.168.114.60 192.168.114.108 TCP 54 54853 → 53 [ACK] Seq=1 Ack=1 Win=65536 Len=0

26 1.035426 192.168.114.60 192.168.114.108 TCP 54 54854 → 53 [ACK] Seq=1 Ack=1 Win=65536 Len=0

> Frame 1708: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface \Device\NPF...
> Ethernet II, Src: IntelCor_a8:0e:67 (2c:6e:85:a8:0e:67), Dst: 82:9b:e9:47:1c:c6 (82:9b:e9:47:1c:c6)
> Internet Protocol Version 4, Src: 192.168.114.60, Dst: 52.98.59.18
> Transmission Control Protocol, Src Port: 52293, Dst Port: 443, Seq: 2, Ack: 1, Len: 0

0000 82 9b e9 47 1c c6 2c 6e 85 a8 0e 67 08 00 45 00 ...G...n...g...E...
0010 00 28 66 ac 40 00 80 06 f1 ca c0 a8 72 3c 34 62 ...f...@...r...4b...
0020 3b 12 cc 45 01 bb d2 0a 51 9d e2 cf c2 78 50 14 ...;...E...Q...xP...
0030 00 00 76 86 00 00 ...v....

Transmission Control Protocol: Protocol

Packets: 2447 · Displayed: 2317 (94.7%)

Profile: Default