

Lab4

Exercise 1:

A Traceroute is a network diagnostic protocol. With this tool, you can follow the route of a data packet in real-time. This protocol confirms that the actual route followed by the packet– and not just the IP addresses– is one that is normally just being used to reach the intended site.

Exercise 3:

- 1: Trace route uses ICMP packets
- 2: an ICMP time exceeded message
- 3: each time a packet passes a router the router sends an ICMP “time exceeded” message back to the computer

2-2

The screenshot displays the Wireshark network protocol analyzer interface. The main pane shows a list of captured packets, with the selected packet (No. 171) being an ICMP Echo (ping) request. The packet details pane on the right shows the structure of the packet, including the Ethernet II header and the Internet Protocol Version 4 header. The packet bytes pane at the bottom shows the raw data in hexadecimal and ASCII format.

No.	Time	Source	Destination	Protocol	Length	Info
154	10.342371	fe80::7026:8dc8:925... fe80::9232:4bff:feb...		ICMPv6	86	Neighbor Advertisement
164	11.079558	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
166	11.112698	2001:4998:24:d611::1 2001:569:fda3:5000::...		ICMPv6	174	Time Exceeded (hop 1)
167	11.114957	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
169	11.148464	2001:4998:24:d611::1 2001:569:fda3:5000::...		ICMPv6	174	Time Exceeded (hop 1)
170	11.150852	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
171	11.183821	2001:4998:24:d611::1 2001:569:fda3:5000::...		ICMPv6	174	Time Exceeded (hop 1)
175	11.464002	fe80::9232:4bff:feb... fe80::7026:8dc8:925...		ICMPv6	86	Neighbor Solicitation
176	11.464053	fe80::7026:8dc8:925... fe80::9232:4bff:feb...		ICMPv6	86	Neighbor Advertisement
233	12.173685	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
234	12.177027	fe80::9232:4bff:feb... fe80::7026:8dc8:925...		ICMPv6	86	Neighbor Solicitation
235	12.177080	fe80::7026:8dc8:925... fe80::9232:4bff:feb...		ICMPv6	86	Neighbor Advertisement
237	12.200273	2001:4998:24:120d::... 2001:569:fda3:5000::...		ICMPv6	126	Echo (ping) reply id=...
239	12.202315	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
240	12.238121	2001:4998:24:120d::... 2001:569:fda3:5000::...		ICMPv6	126	Echo (ping) reply id=...
241	12.240298	2001:569:fda3:5000::... 2001:4998:24:120d::...		ICMPv6	126	Echo (ping) request id=...
242	12.276874	2001:4998:24:120d::... 2001:569:fda3:5000::...		ICMPv6	126	Echo (ping) reply id=...

Frame 64: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF_{44C8B...} Ethernet II, Src: HonHaiPr_b9:7f:e5 (90:32:4b:b9:7f:e5), Dst: IntelCor_77:7a:4a (d8:f8:83:77:7a:4a) Internet Protocol Version 4, Src: 192.168.1.66, Dst: 192.168.1.71

0000 d8 f8 83 77 7a 4a 90 32 4b b9 7f e5 00 00 45 00 ...wzJ.2 K....E-
0010 00 5c 27 c4 00 00 40 11 ce f3 c0 a8 01 42 c0 a8 ...\....@....B...
0020 01 47 14 eb c5 b4 00 48 57 8a 51 95 00 00 00 01 ...6....H W Q....
0030 00 01 00 00 00 00 0f 42 52 57 39 30 33 32 34 428 R009324B
0040 42 39 37 46 45 35 00 00 01 00 01 0f 42 52 57 39 B97FE5....BRW0
0050 30 33 32 34 42 42 39 37 46 45 35 00 00 01 01 0324B897 FE5.....

2-6 part 1

```
C:\Users\Fabra>tracert www.yahoo.com

Tracing route to new-fp-shed.wg1.b.yahoo.com [2001:4998:24:120d::1:0]
over a maximum of 30 hops:

  1  16 ms  15 ms  15 ms  node-1w7jr9up5gi4rrze8g88tp9a8.ipv6.telus.net [2001:569:fda3:5000:72f1:9
6ff:fe9a:d840]
  2  19 ms  17 ms  16 ms  node-1w7jr9sukvh7wu6xio33a99u8.ipv6.telus.net [2001:569:c002:f::10]
  3  31 ms  27 ms  27 ms  sttlwawbgr80.bb.telus.com [2001:568:1::50a]
  4  30 ms  29 ms  28 ms  as10310.sttlwawbci01.bb.telus.com [2001:568:1::13]
  5  34 ms  36 ms  32 ms  ae-7.pat2.gqb.yahoo.com [2001:4998:f007:6::1]
  6  32 ms  35 ms  30 ms  et-1-0-0.msr1.gq2.yahoo.com [2001:4998:f00f:20c::1]
  7  34 ms  33 ms  33 ms  et-0-1-0.clr2-a-gdc.gq2.yahoo.com [2001:4998:24:fe02::1]
  8  35 ms  30 ms  31 ms  2001:4998:24:f803::1
  9  32 ms  31 ms  33 ms  et26.usw1-1-lbc.gq2.yahoo.com [2001:4998:24:d810::1]
 10  34 ms  33 ms  33 ms  media-router-fp73.prod.media.vip.gq1.yahoo.com [2001:4998:24:120d::1:0]
```

2-6 part 2

```
Trace complete.

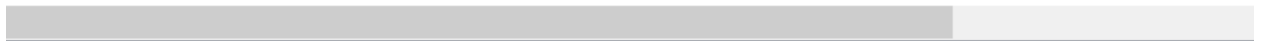
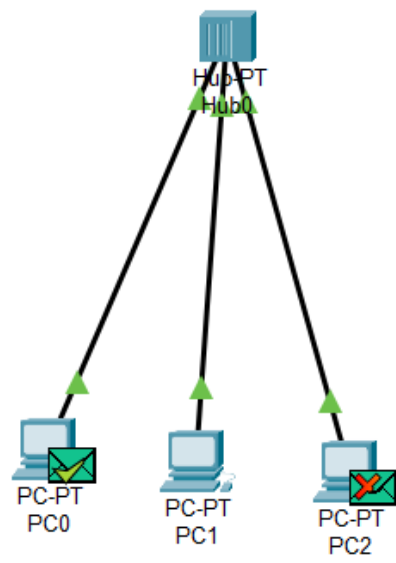
C:\Users\Fabra>tracert -d www.yahoo.com

Tracing route to new-fp-shed.wg1.b.yahoo.com [2001:4998:24:120d::1:0]
over a maximum of 30 hops:

 1    16 ms    15 ms    16 ms    2001:569:fda3:5000:72f1:96ff:fe9a:d840
 2    17 ms    18 ms    18 ms    2001:569:c002:f::10
 3    29 ms    27 ms    29 ms    2001:568:1::50a
 4    29 ms    27 ms    28 ms    2001:568:1::13
 5    32 ms    33 ms    32 ms    2001:4998:f007:6::1
 6    32 ms    30 ms    30 ms    2001:4998:f00f:20c::1
 7    35 ms    39 ms    33 ms    2001:4998:24:fe02::1
 8    33 ms    31 ms    31 ms    2001:4998:24:f803::1
 9    34 ms    33 ms    31 ms    2001:4998:24:d811::1
10    34 ms    33 ms    33 ms    2001:4998:24:120d::1:0

Trace complete.
```

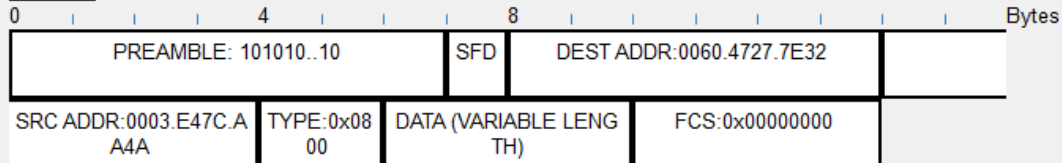
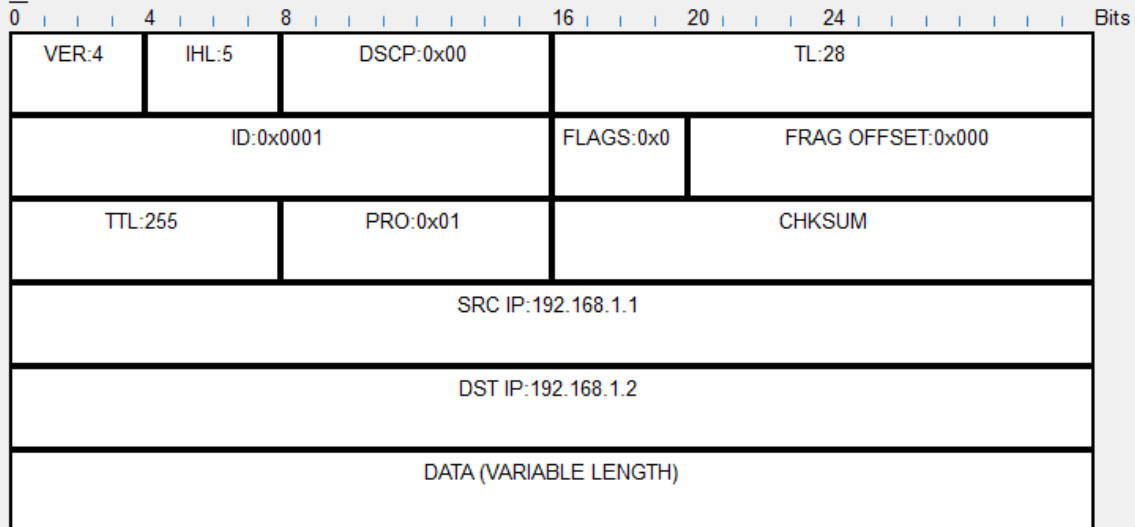
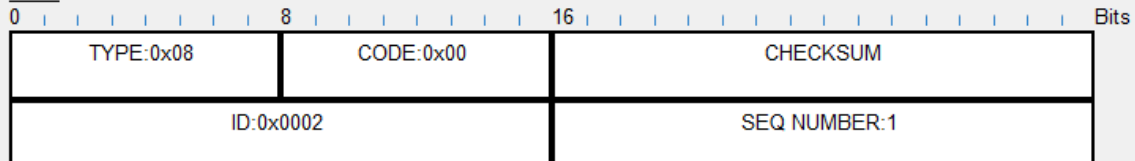
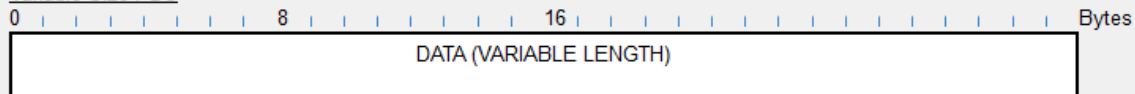
3-1



PDU Information at Device: Hub0


 OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

EthernetIIIPICMPVariable Size PDU

IMCP						
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	fe80::9232:4bff:feb...	fe80::7026:8dc8:925...	ICMPv6	86	Neighbor Solicitation
2	0.000072	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Advertisement
6	0.937249	fe80::9232:4bff:feb...	fe80::7026:8dc8:925...	ICMPv6	86	Neighbor Solicitation
7	0.937282	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Advertisement
36	2.048126	fe80::9232:4bff:feb...	fe80::7026:8dc8:925...	ICMPv6	86	Neighbor Solicitation
37	2.048183	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Advertisement
927	4.610214	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Solicitation
1208	5.610810	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Solicitation
1343	6.610410	fe80::7026:8dc8:925...	fe80::9232:4bff:feb...	ICMPv6	86	Neighbor Solicitation

> Frame 1: 86 bytes on wire (688 bits), 86 bytes captured (688 bits) on interface \Device\NPF_{44CBCC8B-A...}

▼ Ethernet II, Src: HonHaiPr_b9:7f:e5 (90:32:4b:b9:7f:e5), Dst: IntelCor_77:7a:4a (d8:f8:83:77:7a:4a)

- > Destination: IntelCor_77:7a:4a (d8:f8:83:77:7a:4a)
- > Source: HonHaiPr_b9:7f:e5 (90:32:4b:b9:7f:e5)
- Type: IPv6 (0x86dd)

▼ Internet Protocol Version 6, Src: fe80::9232:4bff:feb9:7fe5, Dst: fe80::7026:8dc8:9250:e141

- 0110 = Version: 6
- > 0000 0000 = Traffic Class: 0x00 (DSCP: CS0, ECN: Not-ECT)
- 0000 0000 0000 0000 = Flow Label: 0x000000
- Payload Length: 32
- Next Header: ICMPv6 (58)
- Hop Limit: 255
- Source Address: fe80::9232:4bff:feb9:7fe5
- Destination Address: fe80::7026:8dc8:9250:e141
- [Source SLAAC MAC: HonHaiPr_b9:7f:e5 (90:32:4b:b9:7f:e5)]

▼ Internet Control Message Protocol v6

- Type: Neighbor Solicitation (135)
- Code: 0
- Checksum: 0xe07b [correct]
- [Checksum Status: Good]
- Reserved: 00000000
- Target Address: fe80::7026:8dc8:9250:e141
- > ICMPv6 Option (Source link-layer address : 90:32:4b:b9:7f:e5)