LAB 4\_Jinbo Li\_Taoran Liu

We have read and understood the course academic integrity policy.

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Q1: What is the IP address of your host? What is the IP address of the destination host?

A:

The IP address of my host is 10.0.0.183. The IP address of the destination host is 143.89.12.134.

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Q2: Why is it that an ICMP packet does not have source and destination port numbers?

A:

An ICMP packet does not have source and destination port numbers because it is not a transport layer protocol like TCP or UDP. ICMP is a network layer protocol that is used to send error messages and operational information between hosts and routers. ICMP does not need port numbers because it does not establish connections or exchange data between applications. Instead, ICMP uses a type and a code field to identify the specific message being sent or received.

Q3: Examine one of the ping request packets sent by your host. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?

A:

ICMP type is 8 and code number is 0. The fields of ICMP packet also have Checksum, Identifier (BE), Identifier (LE), Sequence Number (BE), Sequence Number (LE) and Data. The checksum field is 2 bytes. The sequence number field is 2 bytes. The identifier field is 2 bytes.

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Q4: Examine the corresponding ping reply packet. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?

A:

The ICMP type is 0 and the code number is 0. The fields of ICMP packet also have Checksum, Identifier (BE), Identifier (LE), Sequence Number (BE), Sequence Number (LE) and Data. The checksum field is 2 bytes. The sequence number field is 2 bytes. The identifier field is 2 bytes.

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2. ICMP and Traceroute

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Q5: What is the IP address of your host? What is the IP address of the target destination host?

A:

The IP address of my host is 10.0.0.183. The IP address of the target destination host is 128.93.162.83.

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Q6: If you used Windows tracert: If tracert sent UDP packets instead (as in Unix/Linux), what would the IP protocol number be for the probe packets?

A:

The IP protocol number for the probe packets would be 0x11.

Q7: Examine the ICMP echo packet in your screenshot. Is this different from the ICMP ping query packets in the first half of this lab? If yes, how so?

A:

No. The ICMP echo packet is the same as the ICMP ping query packets.

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Q8: Examine the ICMP error packet in your screenshot. It has more fields than the ICMP echo packet. What is included in those fields?

A:

Those fields include IP header and ICMP echo packet.

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Q9: Examine the last three ICMP packets received by the source host. How are these packets different from the ICMP error packets? Why are they different?

A:

The type of the last three ICMP packets received by the source host is 0. But the type of ICMP error packets is 11 (Time Exceeded). It is because all of the datagram was sent to the source host before TTL expired in the last three ICMP packets.

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*Third to last ICMP packet*

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*Second to last ICMP packet*

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*The last ICMP packet*

Q10: Within the tracert measurements, is there a link whose delay is significantly longer than others? Refer to the screenshot in Figure 4, is there a link whose delay is significantly longer than others? On the basis of the router names, can you guess the location of the two routers on the end of this link?

A:

According to our tracert, the link between 9 and 10 is significantly longer than others. According to the screenshot in Figure 4, the link between 9 and 10 is significantly longer than others. The two routers on the end of this link are in the New York, United States and Pastourelle, France respectively.

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*Figure 4 in the Lab*