Answer the following questions in a text file called k8s-net-question-1.txt and put it in the root of your git repository.:

1. Are there any ARP exchanges? YES
2. What are the IP and MAC addresses of the IP packets containing the ICMP echo requests and echo reply?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Client1/server | IP Source | IP destination | MAC Source | MAC destination |
| Request | 10.233.65.10 | 10.233.65.11 | 8e:0c:56:9b:25:be | fa:cc:56:6b:d6:a6 |
| Reply | 10.233.65.11 | 10.233.65.10 | fa:cc:56:6b:d6:a6 | 8e:0c:56:9b:25:be |

1. Are the IP and MAC addresses of the IP packets carrying the TCP connection started by curl the same as in the question above? Yes

1. Compare the TTL values of the IP packer in the different traces. Explain what you observe.

The TTL is the same(64) because the server and client1 directly connect.

1. In your opinion, did any of the packets in your trace files leave the machine hosting client-1? Why?

No, because the ？？？？

Answer the following questions in a text file called k8s-net-question-2.txt (in the root of your repository):

1. Are there any ARP exchanges? YES
2. What are the IP and MAC addresses of the IP packets containing the ICMP echo requests and echo reply?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Client2 | IP Source | IP destination | MAC source | MAC dest | TTL |
| Request | 10.233.66.6 | 10.233.65.11 | be:d3:08:6c:43:e2 | 66:3c:94:3f:01:d3 | 64 |
| Reply | 10.233.65.11 | 10.233.66.6 | 66:3c:94:3f:01:d3 | be:d3:08:6c:43:e2 | 62 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Server | IP Source | IP destination | MAC source | MAC dest | TTL |
| Request | 10.233.66.6 | 10.233.65.11 | Broadcom\_90:22:6e (b0:26:28:90:22:6e) | Broadcom\_90:26:62 (b0:26:28:90:26:62) | 63 |
| Reply | 10.233.65.11 | 10.233.66.6 | Broadcom\_90:26:62 (b0:26:28:90:26:62) | Broadcom\_90:22:6e (b0:26:28:90:22:6e) | 63 |

1. Compare the MAC addresses used in this case to those used in the previous case (pods on the same node). What is the main difference?

The IP Address is the same but the MAC Address is different because server and client2 are not directly connect. When Client2 sent a message to Server, the MAC Address Destination is a route's MAC. AND When server receive the message, the MAC Source also is route's

1. Compare the TTL values of the IP packer in the different traces. Explain what you observe.

The TTL is different because server and client2 are not directly connect ,they communicate via router. So TTL cut 1 when messages pass a router and we can see that there is one route between client2 and server.

1. In your opinion, did any of the packets in your trace files leave the machine hosting client-2? Why? (Hint: this is a trick question, the answer is not as simple as you may think at first. Make sure to take into account all the headers (including layer two) of all the packets that you have captured.)

Yes, because some packet come from the hosting machine of client-2 throughout a router on interface broadcoam \_90:22:6e.

Answer the following questions in a file called k8s-net-question-3.txt (in the root of your git repository):

1. Are there any ARP exchanges? YES
2. What are the IP and MAC addresses of the IP packets containing the ICMP echo requests and echo reply?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Client2 | IP Source | IP destination | MAC source | MAC dest | TTL |
| Request | 10.233.66.6 | 10.233.65.11 | be:d3:08:6c:43:e2 | 66:3c:94:3f:01:d3 | 64 |
| Reply | 10.233.65.11 | 10.233.66.6 | 66:3c:94:3f:01:d3 | be:d3:08:6c:43:e2 | 62 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Server | IP Source | IP destination | MAC source | MAC dest | TTL |
| Request | 10.233.66.6 | 10.233.65.11 | Broadcom\_90:22:6e (b0:26:28:90:22:6e) | Broadcom\_90:26:62 (b0:26:28:90:26:62) | 63 |
| Reply | 10.233.65.11 | 10.233.66.6 | Broadcom\_90:26:62 (b0:26:28:90:26:62) | Broadcom\_90:22:6e (b0:26:28:90:22:6e) | 63 |

1. Compare the IP addresses of the packets sent from client-2 to the addresses in the corresponding packet received by websever-1. What do you observe?

The IP Address is the same

1. Compare the TTL values of the IP packer in the different traces. Explain what you observe.

Look at the answer of question2 ,we can find that TTL is different between 'Request' and 'Reply' at client2 but TTL is the same at server .The TTL is different because server and client2 are not directly connect ,they communicate via router( TTL cut 1 when messages pass a router). According to the number of TTL ,we can see that there is one route between client2 and server.