

Hands-on-4

Q1: What are the IP addresses and TCP ports of BingBing and DongDong?

DongDong(Sender):

- IP addresses: **128.30.4.222**
- TCP ports: **39675**

BingBing(Receiver):

- IP addresses: **128.30.4.223**
- TCP ports: **5001**

Q2: How many KB were transferred during this TCP session and how long did it last?

The last SYN packet DongDong sent to BingBing :

```
12:34:44.311921 IP 128.30.4.222.39675 > 128.30.4.223.5001: Flags [FP.], seq  
1572017:1572889, ack 1, win 115, options [nop,nop,TS val 282139311 ecr 282204927],  
length 872
```

So the **1572888KB** were transferred during this TCP session.

It last about 12:34:44.339015 - 12:34:41.473036 = **2.866** seconds.

Q3: What is the throughput (in KB/s) of this TCP flow between DongDong and BingBing?

The throughput of this TCP flow is 1572888 / 2.866 \approx **548809.49 KB/s**

Q4: What is the round-trip time (RTT) between DongDong and BingBing?

There are three records:

```
12:34:41.473518 IP 128.30.4.222.39675 > 128.30.4.223.5001: Flags [S], seq 1258159963,  
win 14600, options [mss 1460,sackOK,TS val 282136473 ecr 0,nop,wscale 7], length 0  
12:34:41.474055 IP 128.30.4.223.5001 > 128.30.4.222.39675: Flags [S.], seq 2924083256,  
ack 1258159964, win 14480, options [mss 1460,sackOK,TS val 282202089 ecr  
282136473,nop,wscale 7], length 0  
12:34:41.474079 IP 128.30.4.222.39675 > 128.30.4.223.5001: Flags [.], ack 1, win 115,  
options [nop,nop,TS val 282136474 ecr 282202089], length 0
```

RTT is measured as a delay between sender sending a SYN packet and receiving a ACK packet.

So the RTT is $12:34:41.474079 - 12:34:41.473518s = \mathbf{0.561\ ms}$