1. Raw Measurements

This measured the time taken for the intermediate thread to deliver a packet with 1000 bytes data for 1000 times.

System.nanoTime

Client to Server Packet	Server to Client Packet
920310300	920249200
1181054600	1181018200
1150949000	1150945000
975522300	975540500
947996800	947946400
947169400	947169000
935925800	935954600
1170835100	1170798700
1146993500	1147017600
1151986800	1151992200

Mean: 1052874360, 1052863140

Variance: 1.1805161143218E+16, 1.1805582787795E+16

95% Confidence Interval: (1052874360 ± 67300000), (1052863140 ± 67300000)

java.time.Instant

Client to Server Packet	Server to Client Packet
983873600	983873600
1180977900	1180977900
1220735600	1220735600
1225724600	1225724600
1262622100	1262622100
1225719300	1225719300
1193806900	1193806900
1195801300	1195801300
1224267100	1224267100
1217453500	1217453500

Mean: 1193098190, 1193098190

Variance: 5.3220341579989E+15, 5.3220341579989E+15

95% Confidence Interval: (1193098190 ± 45200000), (1193098190 ± 45200000)

2. Your thoughts on why the values you get from each method is different and why you think one value is better than the other.

The observation shows that time taken to deliver a packet is longer when measuring it with java.time.Instant methods than System.nanoTime. I thought the reason is the processing speed. The System.nanoTime depends on the underlying architecture and can run in more than a hundred CPU clocks. So I assume that System.nanoTime uses more resources than java.time.Instant and takes slightly less time to record a time-stamp.

3. Your best estimate for the time it takes the intermediate task to process a single packet. Don't forget that the intermediate task is sending packets in both directions.

At 95% Confidence Interval, both the client to server packet delivery and the server to client packet delivery are almost the same, or server to client delivery is slightly faster. My estimation is around 1052870000 nanoseconds to process a packet for 1000 times. Therefore, I estimate that it would take 1052870 nanoseconds to process a single packet for both directions.