

Q1:

It takes 5.934728045 seconds to transfer

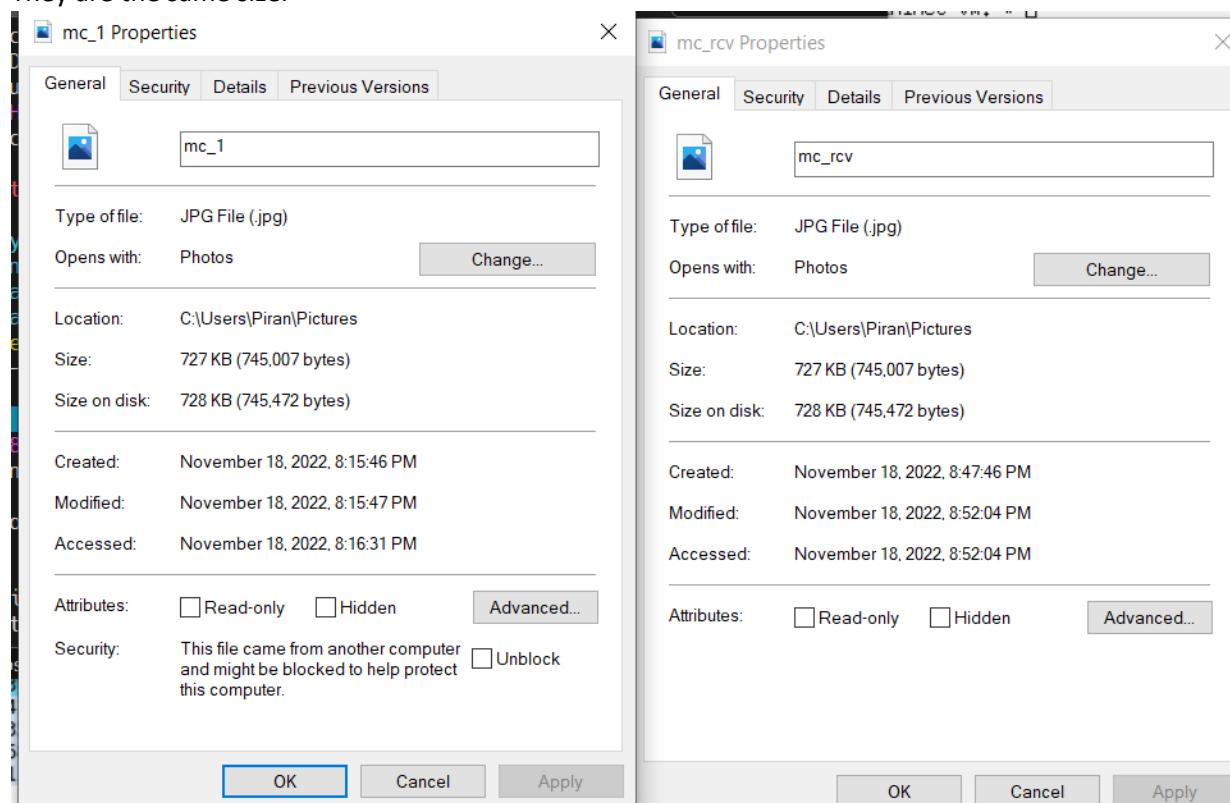
The packets are sent from node1 to node2 every time. node2 never sends to node1 as shown in the images.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
2	0.003614260	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
3	0.020009229	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
4	0.036362014	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
5	0.052814465	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
6	0.069245524	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
7	0.085545491	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
8	0.101915112	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
9	0.118282837	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
10	0.134771548	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
11	0.151077765	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
12	0.167551844	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
13	0.183823008	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
14	0.200235948	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
15	0.216732772	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
16	0.233011554	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
17	0.249367278	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
18	0.265785999	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
19	0.282260514	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
20	0.298723850	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
21	0.314900645	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
22	0.331299336	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
23	0.347682295	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
24	0.364038989	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
25	0.380424147	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
26	0.396958886	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
27	0.413407774	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
28	0.429720465	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
29	0.446039360	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
30	0.462397382	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
31	0.478778096	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
32	0.495304590	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
33	0.511805715	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
34	0.528110982	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
35	0.544314549	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
36	0.560980364	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
37	0.577097178	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048
38	0.593448424	10.0.0.1	10.0.0.2	UDP	2090	34932 → 34567 Len=2048

328	5.344799284	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
329	5.361170782	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
330	5.377550259	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
331	5.393992985	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
332	5.410358797	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
333	5.426940934	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
334	5.443394020	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
335	5.459636519	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
336	5.475950234	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
337	5.492291510	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
338	5.508639653	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
339	5.525298335	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
340	5.541454052	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
341	5.557819524	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
342	5.574563826	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
343	5.590640796	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
344	5.607217256	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
345	5.623315146	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
346	5.639906400	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
347	5.656124246	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
348	5.672755760	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
349	5.688952509	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
350	5.705254210	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
351	5.721632800	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
352	5.738018464	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
353	5.754384316	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
354	5.770797466	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
355	5.787261733	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
356	5.803537626	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
357	5.819924127	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
358	5.836310958	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
359	5.852716985	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
360	5.869069061	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
361	5.885464407	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
362	5.901836681	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
363	5.918564904	10.0.0.1	10.0.0.2	UDP	2090 34932 → 34567 Len=2048
364	5.934728045	10.0.0.1	10.0.0.2	UDP	1625 34932 → 34567 Len=1583
365	5.947317735	00:00:00 00:00:01	00:00:00 00:00:02	ARP	42 Who has 10.0.0.2? Tell 10.0.0.1
366	6.005411155	00:00:00 00:00:01	00:00:00 00:00:02	ARP	42 Who has 10.0.0.2? Tell 10.0.0.1
367	6.320158534	00:00:00 00:00:02	00:00:00 00:00:01	ARP	42 10.0.0.2 is at 00:00:00 00:00:02

Q2)

They are the same size.



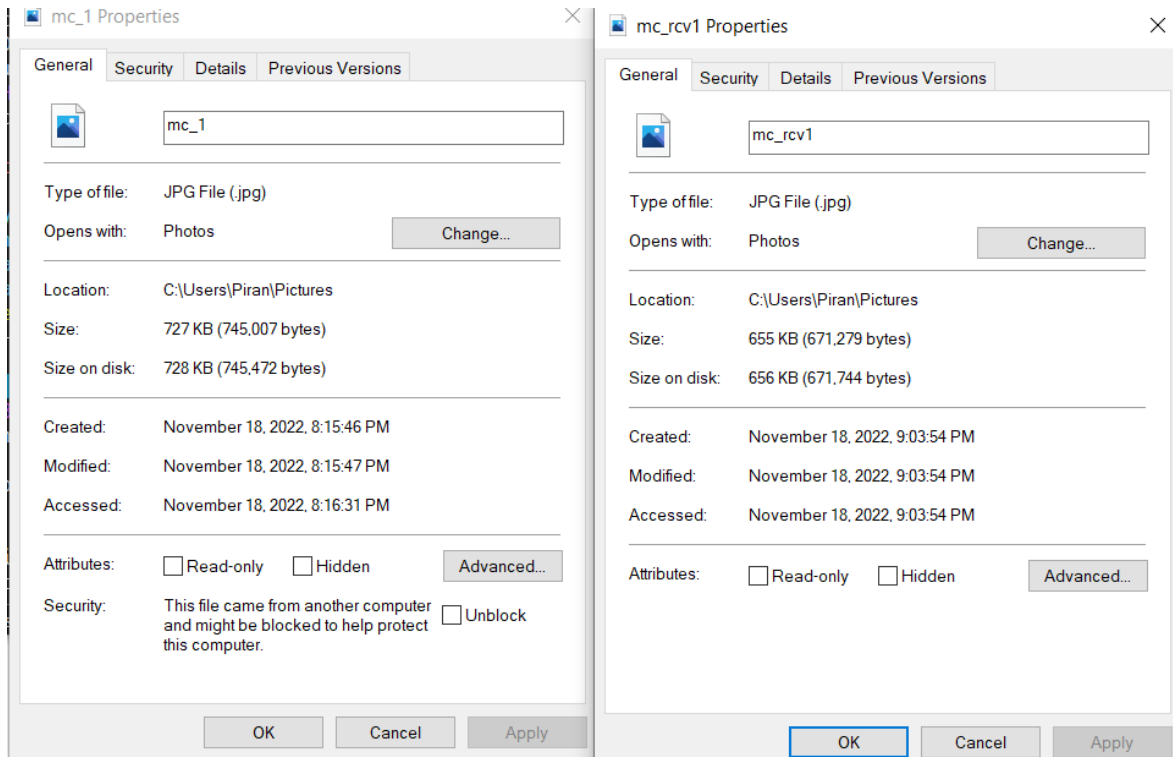
Q3)

368	6.319767118	00:00:00	00:00:02	00:00:00	00:00:01	ARP	42	10.0.0.2	is at 00:00:00:00:00:02
369	508.583983696	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
370	508.600451205	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
371	508.616766995	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
372	508.633213948	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
373	508.649581649	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
374	508.665913409	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
375	508.682301594	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
376	508.699134471	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
377	508.715137160	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
378	508.731634899	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
379	508.747831724	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
380	508.764543053	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
381	508.780604905	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
382	508.797013697	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
383	508.813484404	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
384	508.829964951	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
385	508.846192577	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
386	508.862521395	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
387	508.878906207	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
388	508.895289300	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
389	508.911670595	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
390	508.928059189	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
391	508.944673562	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
392	508.960928766	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
393	508.977512560	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
394	508.993610670	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
395	509.010088832	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
396	509.026565241	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
397	509.042843677	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
398	509.059127170	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
399	509.075512983	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
400	509.091967861	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
401	509.108281054	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
402	509.124702280	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
403	509.141045689	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
404	509.157461033	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048
405	509.173811090	10.0.0.1	10.0.0.2	UDP	2090	50453	→	34567	Len=2048

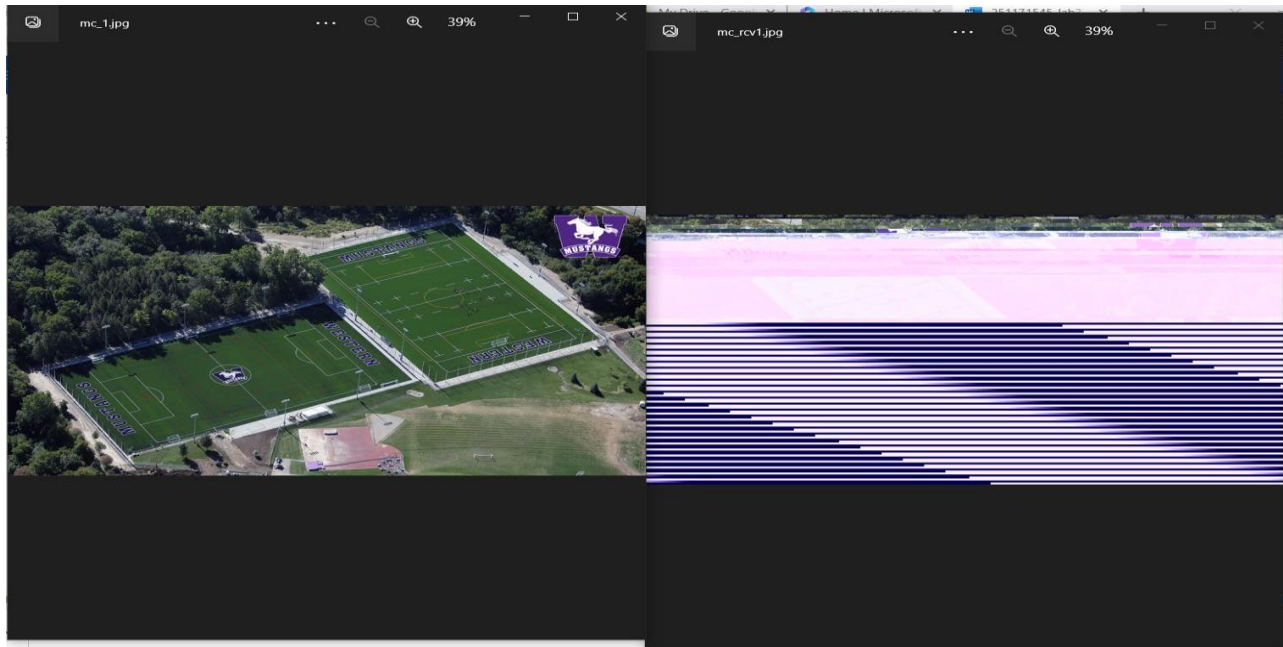
0000 00 00 00 00 00 02 00 00 00 00 01 08 00 45 00E

691	513.839834384	10.0.0.1	10.0.0.2	UDP	2090	50453 → 34567	Len=2048
692	513.876473816	10.0.0.1	10.0.0.2	UDP	2090	50453 → 34567	Len=2048
693	513.892498808	10.0.0.1	10.0.0.2	UDP	2090	50453 → 34567	Len=2048
694	513.909215262	10.0.0.1	10.0.0.2	UDP	2090	50453 → 34567	Len=2048
695	513.925194718	10.0.0.1	10.0.0.2	UDP	2090	50453 → 34567	Len=2048
696	513.938134756	10.0.0.1	10.0.0.2	UDP	1625	50453 → 34567	Len=1583
697	513.938467351	00:00:00_00:00:01	00:00:00_00:00:02	ARP	42	Who has 10.0.0.2? Tell 10.0.0.1	
698	514.292074555	00:00:00_00:00:02	00:00:00_00:00:01	ARP	42	10.0.0.2 is at 00:00:00:00:00:02	

The time elapsed is $513.938134756 - 508.583983696 = 5.3541511$ seconds.



For q1 its time is a bit faster for the transfer and for q2 the size differs quite a bit. The picture also differs quite a bit.



Q4)

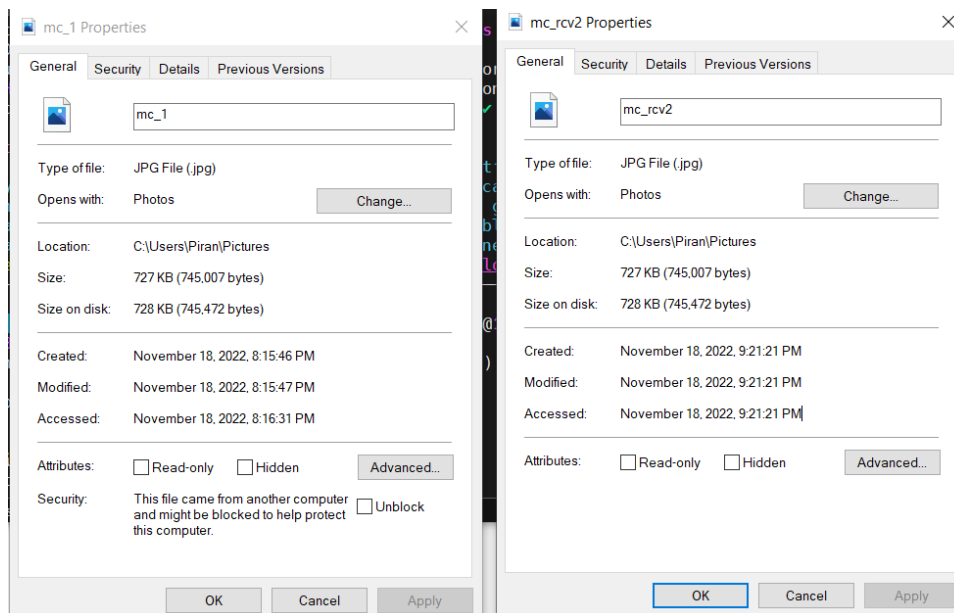
It took a total of 6.742557579. As the screenshots shows, TCP packets are sent by both node 1 and node 2.

1	0.000000000	10.0.0.1	10.0.0.2	TCP	74	38178	-	34567	[SYN, ACK] Seq=0 Win=29200 Len=0 MSS=1460 SACK PERM=1 TSval=2186545 TSecr=0
2	0.151206710	10.0.0.2	10.0.0.1	TCP	74	34567	-	38178	[SYN, ACK] Seq=0 Ack=1 Win=28960 Len=0 MSS=1460 SACK PERM=1 TSval=2186570 TSecr=2186545
3	0.201801436	10.0.0.1	10.0.0.2	TCP	66	38178	-	34567	[ACK] Seq=1 Ack=1 Win=29696 Len=0 TSval=2186595 TSecr=2186570
4	0.219251712	10.0.0.1	10.0.0.2	TCP	2114	38178	-	34567	[PSH, ACK] Seq=1 Ack=1 Win=29696 Len=2048 TSval=2186595 TSecr=2186570
5	0.231383214	10.0.0.1	10.0.0.2	TCP	1514	38178	-	34567	[ACK] Seq=2849 Ack=1 Win=29696 Len=1448 TSval=2186595 TSecr=2186570
6	0.243456585	10.0.0.1	10.0.0.2	TCP	1514	38178	-	34567	[ACK] Seq=3497 Ack=1 Win=29696 Len=1448 TSval=2186595 TSecr=2186570
7	0.267916248	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=4945 Ack=1 Win=29696 Len=2896 TSval=2186595 TSecr=2186570
8	0.279808365	10.0.0.1	10.0.0.2	TCP	1514	38178	-	34567	[ACK] Seq=7841 Ack=1 Win=29696 Len=1448 TSval=2186595 TSecr=2186570
9	0.304004537	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=9289 Ack=1 Win=29696 Len=2896 TSval=2186595 TSecr=2186570
10	0.316338067	10.0.0.1	10.0.0.2	TCP	1514	38178	-	34567	[ACK] Seq=12185 Ack=1 Win=29696 Len=1448 TSval=2186595 TSecr=2186570
11	0.369981457	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=1449 Win=32256 Len=0 TSval=2186625 TSecr=2186595
12	0.369982659	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=2049 Win=34816 Len=0 TSval=2186625 TSecr=2186595
13	0.381907318	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=3497 Win=37888 Len=0 TSval=2186628 TSecr=2186595
14	0.393704807	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=4945 Win=40960 Len=0 TSval=2186631 TSecr=2186595
15	0.418455716	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=7841 Win=46592 Len=0 TSval=2186637 TSecr=2186595
16	0.429941834	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=9289 Win=49664 Len=0 TSval=2186640 TSecr=2186595
17	0.444373393	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=13633 Ack=1 Win=29696 Len=2896 TSval=2186650 TSecr=2186625
18	0.454645646	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=12185 Win=55296 Len=0 TSval=2186646 TSecr=2186595
19	0.466655056	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=13633 Win=58368 Len=0 TSval=2186649 TSecr=2186595
20	0.468513105	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=16529 Ack=1 Win=29696 Len=2896 TSval=2186650 TSecr=2186625
21	0.492710455	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=19425 Ack=1 Win=29696 Len=2896 TSval=2186653 TSecr=2186628
22	0.516912463	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=22321 Ack=1 Win=29696 Len=2896 TSval=2186656 TSecr=2186631
23	0.541166789	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=25217 Ack=1 Win=29696 Len=2896 TSval=2186662 TSecr=2186637
24	0.565363517	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=28113 Ack=1 Win=29696 Len=2896 TSval=2186662 TSecr=2186637
25	0.589593378	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=31009 Ack=1 Win=29696 Len=2896 TSval=2186665 TSecr=2186640
26	0.594843732	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=16529 Win=64000 Len=0 TSval=2186681 TSecr=2186650
27	0.613816376	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=33905 Ack=1 Win=29696 Len=2896 TSval=2186671 TSecr=2186646
28	0.619033729	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=19425 Win=69632 Len=0 TSval=2186687 TSecr=2186650
29	0.638172621	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=36801 Ack=1 Win=29696 Len=2896 TSval=2186671 TSecr=2186646
30	0.643147551	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=22321 Win=75776 Len=0 TSval=2186693 TSecr=2186653
31	0.662259009	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=39697 Ack=1 Win=29696 Len=2896 TSval=2186674 TSecr=2186649
32	0.667372993	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=25217 Win=81408 Len=0 TSval=2186699 TSecr=2186656
33	0.686510495	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=42593 Ack=1 Win=29696 Len=2896 TSval=2186706 TSecr=2186681
34	0.691667400	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=28113 Win=87040 Len=0 TSval=2186706 TSecr=2186662
35	0.710716119	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=45489 Ack=1 Win=29696 Len=2896 TSval=2186706 TSecr=2186681
36	0.715493386	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=31009 Win=92672 Len=0 TSval=2186711 TSecr=2186662
37	0.734940395	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=48385 Ack=1 Win=29696 Len=2896 TSval=2186712 TSecr=2186687
38	0.740273569	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=33905 Win=98816 Len=0 TSval=2186718 TSecr=2186665
39	0.759207458	10.0.0.1	10.0.0.2	TCP	2962	38178	-	34567	[ACK] Seq=51281 Ack=1 Win=29696 Len=2896 TSval=2186712 TSecr=2186687
40	0.764137323	10.0.0.2	10.0.0.1	TCP	66	34567	-	38178	[ACK] Seq=1 Ack=36801 Win=104448 Len=0 TSval=2186724 TSecr=2186671

Time	Source	Destination	Protocol	Length	Info
489	6.183545236	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=684641 Win=204800 Len=0 TSval=2188078 TSecr=2187898
490	6.202687938	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=702017 Ack=1 Win=29696 Len=2896 TSval=2187931 TSecr=2187906
491	6.207821333	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=687537 Win=204800 Len=0 TSval=2188085 TSecr=2187904
492	6.227342454	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=704913 Ack=1 Win=29696 Len=2896 TSval=2187937 TSecr=2187912
493	6.232400888	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=690433 Win=204800 Len=0 TSval=2188091 TSecr=2187910
494	6.251186924	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=707809 Ack=1 Win=29696 Len=2896 TSval=2187943 TSecr=2187918
495	6.256329677	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=693329 Win=204800 Len=0 TSval=2188097 TSecr=2187919
496	6.275319871	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=710705 Ack=1 Win=29696 Len=2896 TSval=2187949 TSecr=2187924
497	6.280713093	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=696225 Win=204800 Len=0 TSval=2188103 TSecr=2187919
498	6.299751088	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=713601 Ack=1 Win=29696 Len=2896 TSval=2187955 TSecr=2187930
499	6.304991402	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=699121 Win=204800 Len=0 TSval=2188109 TSecr=2187925
500	6.323802952	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=716497 Ack=1 Win=29696 Len=2896 TSval=2187955 TSecr=2187930
501	6.328929677	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=702017 Win=204800 Len=0 TSval=2188115 TSecr=2187931
502	6.348009161	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=719393 Ack=1 Win=29696 Len=2896 TSval=2187961 TSecr=2187936
503	6.353218188	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=704913 Win=204800 Len=0 TSval=2188121 TSecr=2187931
504	6.360116051	10.0.0.1	10.0.0.2	TCP	1514 38178 → 34567 [ACK] Seq=722289 Ack=1 Win=29696 Len=1448 TSval=2187967 TSecr=2187942
505	6.377902832	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=707809 Win=204800 Len=0 TSval=2188127 TSecr=2187937
506	6.384322688	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=723737 Ack=1 Win=29696 Len=2896 TSval=2187967 TSecr=2187942
507	6.401433230	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=710705 Win=204800 Len=0 TSval=2188133 TSecr=2187943
508	6.408585479	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=726633 Ack=1 Win=29696 Len=2896 TSval=2187973 TSecr=2187948
509	6.425423359	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=713601 Win=204800 Len=0 TSval=2188139 TSecr=2187949
510	6.432967089	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=729529 Ack=1 Win=29696 Len=2896 TSval=2187979 TSecr=2187954
511	6.444891491	10.0.0.1	10.0.0.2	TCP	1514 38178 → 34567 [ACK] Seq=732425 Ack=1 Win=29696 Len=1448 TSval=2187979 TSecr=2187954
512	6.449885200	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=716497 Win=204800 Len=0 TSval=2188145 TSecr=2187955
513	6.469127494	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=733873 Ack=1 Win=29696 Len=2896 TSval=2187985 TSecr=2187960
514	6.474149019	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=719393 Win=204800 Len=0 TSval=2188151 TSecr=2187955
515	6.493339099	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=736769 Ack=1 Win=29696 Len=2896 TSval=2187992 TSecr=2187966
516	6.498445208	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=722289 Win=204800 Len=0 TSval=2188157 TSecr=2187961
517	6.505460420	10.0.0.1	10.0.0.2	TCP	1514 38178 → 34567 [ACK] Seq=739665 Ack=1 Win=29696 Len=1448 TSval=2187992 TSecr=2187966
518	6.529716691	10.0.0.1	10.0.0.2	TCP	2962 38178 → 34567 [ACK] Seq=741113 Ack=1 Win=29696 Len=2896 TSval=2187997 TSecr=2187972
519	6.534561485	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=726633 Win=204800 Len=0 TSval=2188166 TSecr=2187967
520	6.538198992	10.0.0.1	10.0.0.2	TCP	1065 38178 → 34567 [FIN, ACK] Seq=744009 Ack=1 Win=29696 Len=999 TSval=2187997 TSecr=2187972
521	6.558702037	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=729529 Win=204800 Len=0 TSval=2188172 TSecr=2187973
522	6.583270373	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=732425 Win=204800 Len=0 TSval=2188178 TSecr=2187979
523	6.619476361	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=736769 Win=204800 Len=0 TSval=2188187 TSecr=2187979
524	6.643757076	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=739665 Win=204800 Len=0 TSval=2188193 TSecr=2187992
525	6.679830820	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [ACK] Seq=1 Ack=744009 Win=204800 Len=0 TSval=2188203 TSecr=2187992
526	6.691986446	10.0.0.2	10.0.0.1	TCP	66 34567 → 38178 [FIN, ACK] Seq=1 Ack=745009 Win=206336 Len=0 TSval=2188206 TSecr=2187997
527	6.742557579	10.0.0.1	10.0.0.2	TCP	66 38178 → 34567 [ACK] Seq=745009 Ack=2 Win=29696 Len=0 TSval=2188231 TSecr=2188206

Q5)

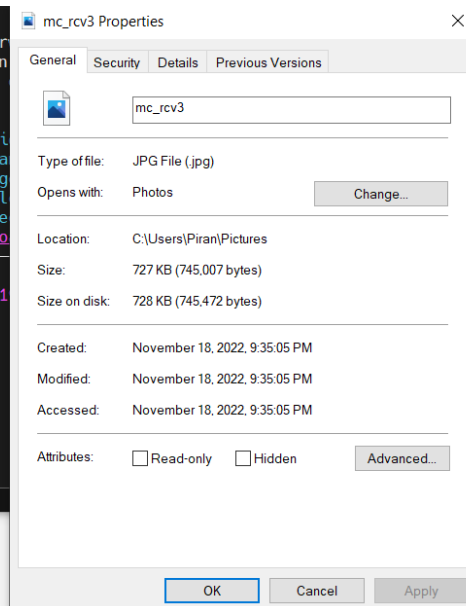
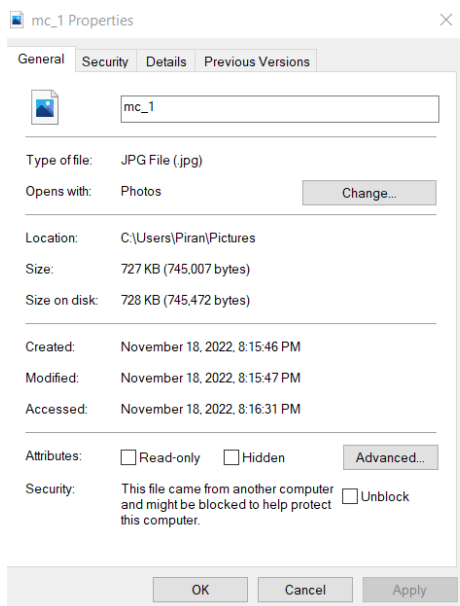
They are the same size



Q6)

I took much longer than before with 33.621530565 seconds being the time. Both nodes send the messages

669	31.736402323	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=713017	Win=168960	Len=0	TSval=2436193	TSecr=2436162	
670	31.786437472	10.0.0.1	10.0.0.2	TCP	1514	38204	→	34567	[ACK]	Seq=714465	Ack=1	Win=29696	Len=1448	TSval=2436215	TSecr=2436190	
671	31.810739543	10.0.0.1	10.0.0.2	TCP	2962	38204	→	34567	[ACK]	Seq=715913	Ack=1	Win=29696	Len=2896	TSval=2436218	TSecr=2436193	
672	31.897802431	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=714465	Win=170496	Len=0	TSval=2436234	TSecr=2436177	
673	31.959972443	10.0.0.1	10.0.0.2	TCP	1514	38204	→	34567	[ACK]	Seq=718809	Ack=1	Win=29696	Len=1448	TSval=2436259	TSecr=2436234	
674	31.960901659	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=718809	Win=170496	Len=0	TSval=2436249	TSecr=2436215	
675	32.035514296	10.0.0.1	10.0.0.2	TCP	2962	38204	→	34567	[ACK]	Seq=720257	Ack=1	Win=29696	Len=2896	TSval=2436274	TSecr=2436249	
676	32.059461474	10.0.0.1	10.0.0.2	TCP	2962	38204	→	34567	[ACK]	Seq=723153	Ack=1	Win=29696	Len=2896	TSval=2436274	TSecr=2436249	
677	32.185947226	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=723153	Win=170496	Len=0	TSval=2436305	TSecr=2436259	
678	32.210224392	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=726049	Win=170496	Len=0	TSval=2436311	TSecr=2436274	
679	32.260241722	10.0.0.1	10.0.0.2	TCP	2962	38204	→	34567	[ACK]	Seq=726049	Ack=1	Win=29696	Len=2896	TSval=2436331	TSecr=2436305	
680	32.284686210	10.0.0.1	10.0.0.2	TCP	2962	38204	→	34567	[ACK]	Seq=728945	Ack=1	Win=29696	Len=2896	TSval=2436337	TSecr=2436311	
681	32.296594628	10.0.0.1	10.0.0.2	TCP	1514	38204	→	34567	[ACK]	Seq=731841	Ack=1	Win=29696	Len=1448	TSval=2436337	TSecr=2436311	
682	32.410931167	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=728945	Win=170496	Len=0	TSval=2436362	TSecr=2436331	
683	32.435071677	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=731841	Win=170496	Len=0	TSval=2436368	TSecr=2436337	
684	32.506286123	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=733289	Win=170496	Len=0	TSval=2436386	TSecr=2436337	
685	32.509379207	10.0.0.1	10.0.0.2	TCP	2962	[TCP Previous segment not captured]	38204	→	34567	[ACK]	Seq=736185	Ack=1	Win=29696	Len=2896	TSval=2436393	TSecr=2436368
686	32.568499996	10.0.0.1	10.0.0.2	TCP	1514	38204	→	34567	[ACK]	Seq=739081	Ack=1	Win=29696	Len=1448	TSval=2436411	TSecr=2436386	
687	32.659757979	10.0.0.2	10.0.0.1	TCP	78	[TCP Dup ACK 684#1]	34567	→	38204	[ACK]	Seq=1	Ack=733289	Win=170496	Len=0	TSval=2436424	TSecr=2436337
688	32.718999213	10.0.0.2	10.0.0.1	TCP	78	[TCP Dup ACK 684#2]	34567	→	38204	[ACK]	Seq=1	Ack=733289	Win=170496	Len=0	TSval=2436430	TSecr=2436337
689	32.722126462	10.0.0.1	10.0.0.2	TCP	1514	[TCP Fast Retransmission]	38204	→	34567	[ACK]	Seq=733289	Ack=1	Win=29696	Len=1448	TSval=2436440	TSecr=2436424
690	32.781297808	10.0.0.1	10.0.0.2	TCP	1514	[TCP Retransmission]	38204	→	34567	[ACK]	Seq=734737	Ack=1	Win=29696	Len=1448	TSval=2436464	TSecr=2436439
691	32.872453116	10.0.0.2	10.0.0.1	TCP	78	34567	→	38204	[ACK]	Seq=1	Ack=734737	Win=169472	Len=0	TSval=2436477	TSecr=2436449	
692	32.931879182	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=740529	Win=169472	Len=0	TSval=2436492	TSecr=2436464	
693	32.995658379	10.0.0.1	10.0.0.2	TCP	1649	[TCP Previous segment not captured]	38204	→	34567	[FIN, PSH, ACK]	Seq=734325	Ack=1	Win=29696	Len=1583	TSval=2436517	TSecr=2436464
694	33.146084337	10.0.0.2	10.0.0.1	TCP	78	[TCP Window Update]	34567	→	38204	[ACK]	Seq=1	Ack=740529	Win=170496	Len=0	TSval=2436546	TSecr=2436464
695	33.208226189	10.0.0.1	10.0.0.2	TCP	1514	[TCP Retransmission]	38204	→	34567	[ACK]	Seq=740529	Ack=1	Win=29696	Len=1448	TSval=2436571	TSecr=2436546
696	33.358356104	10.0.0.2	10.0.0.1	TCP	78	34567	→	38204	[ACK]	Seq=1	Ack=741977	Win=169472	Len=0	TSval=2436599	TSecr=2436571	
697	33.420517939	10.0.0.1	10.0.0.2	TCP	1514	[TCP Retransmission]	38204	→	34567	[ACK]	Seq=741977	Ack=1	Win=29696	Len=1448	TSval=2436624	TSecr=2436599
698	33.570839397	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[ACK]	Seq=1	Ack=745009	Win=169472	Len=0	TSval=2436652	TSecr=2436624	
699	33.570840940	10.0.0.2	10.0.0.1	TCP	66	34567	→	38204	[FIN, ACK]	Seq=1	Ack=745009	Win=170496	Len=0	TSval=2436652	TSecr=2436624	
700	33.621530565	10.0.0.1	10.0.0.2	TCP	66	38204	→	34567	[ACK]	Seq=745009	Ack=2	Win=29696	Len=0	TSval=2436677	TSecr=2436652	



However, the size is still the same unlike before with UDP.

TCP ensures reliable data transfer which allows it to not be affected. Although it took a bit more time, the result is the same.

Q7) Done

Q8)

The plots are different because of the packet loss. 1 percent shows growth and timeouts are when the size drops to minimum segment size. The less packet loss results in the size growing much more than the 10 percent graph. The 1 percent graph continues upward whereas the 10 percent one plateaus very early on. Losses indicate timeouts and TCP as a result sets the window back to minimum segment size. This means there is less chance for loss and more potential for a larger size. This results in a file being transferred much faster.

