תז 1: 214968240

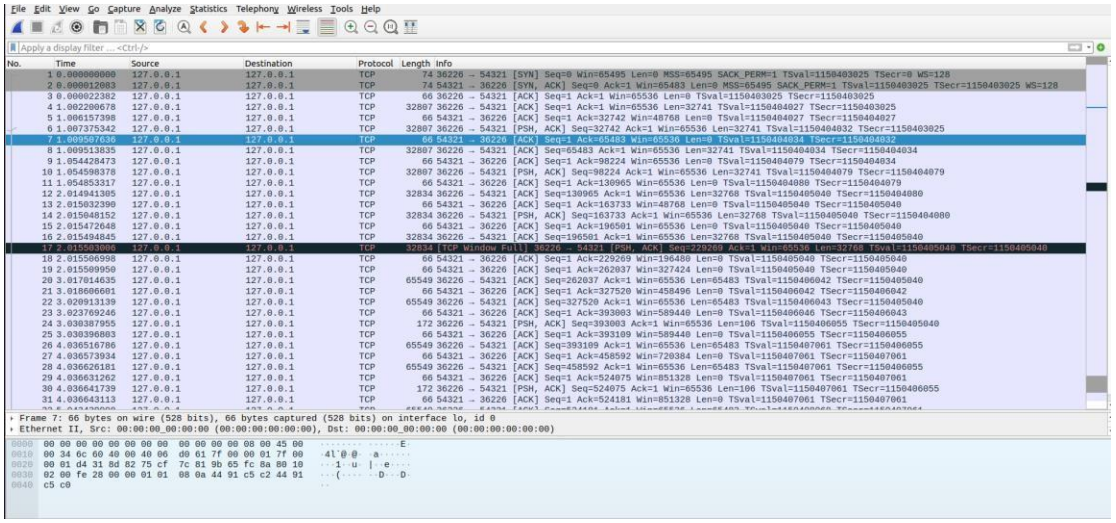
תז 2: 208731091

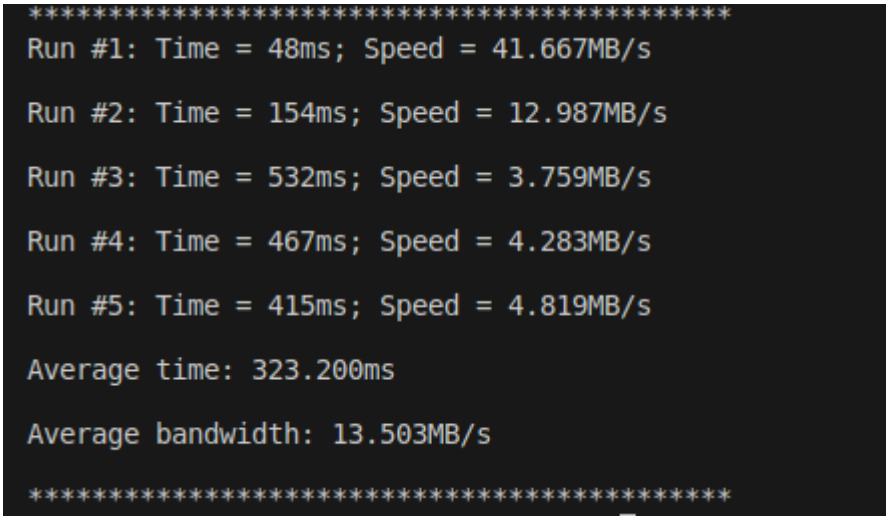
בחלק הראשון השתמשנו ב – ipv4

עבור חלק א' בקוד יש הערות והסברים עליו.

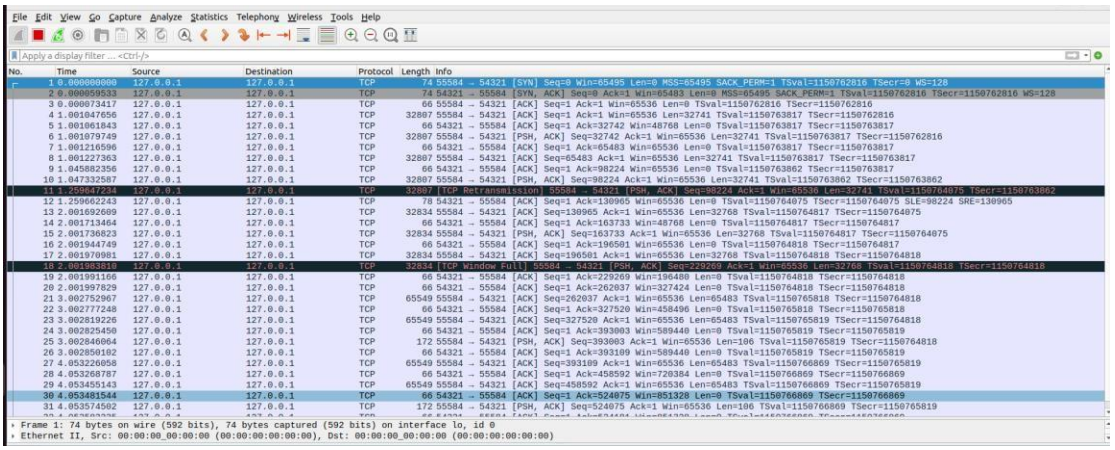
הקלטות עבור reno:

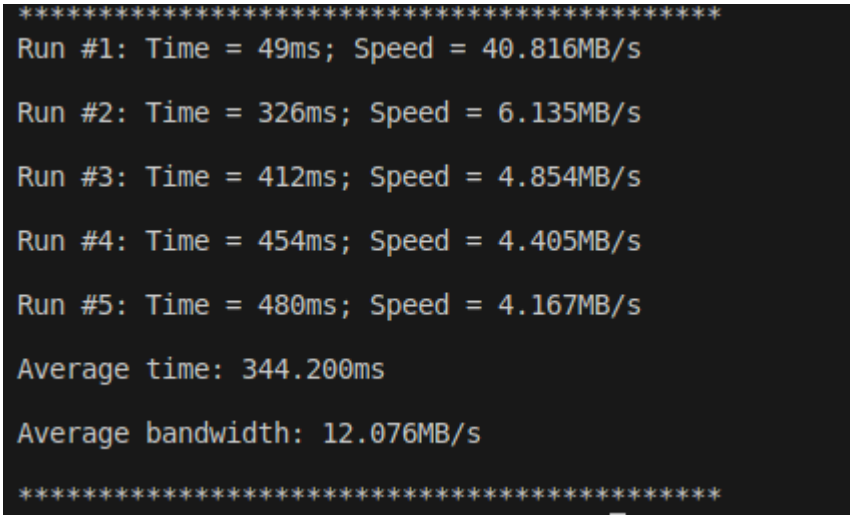
אפס אחוז איבוד —





2 אחוז איבוד-


File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
1 0.000000000 127.0.0.1 127.0.0.1 TCP 74 55584 → 54321 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=1150762816 TSecr=0 WS=128
2 0.000059533 127.0.0.1 127.0.0.1 TCP 74 54321 → 55584 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1150762816 TSecr=1150762816 WS=128
3 0.000073417 127.0.0.1 127.0.0.1 TCP 66 55584 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1150762816 TSecr=1150762816
4 1.001047656 127.0.0.1 127.0.0.1 TCP 32807 55584 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=32741 TSval=1150763817 TSecr=1150762816
5 1.001061843 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=32742 Win=48768 Len=0 TSval=1150763817 TSecr=1150763817
6 1.001079749 127.0.0.1 127.0.0.1 TCP 32807 55584 → 54321 [PSH, ACK] Seq=32742 Ack=1 Win=65536 Len=32741 TSval=1150763817 TSecr=1150762816
7 1.001216596 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=65483 Win=65536 Len=0 TSval=1150763817 TSecr=1150763817
8 1.001227363 127.0.0.1 127.0.0.1 TCP 32807 55584 → 54321 [ACK] Seq=65483 Ack=1 Win=65536 Len=32741 TSval=1150763817 TSecr=1150763817
9 1.045882356 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=98224 Win=65536 Len=0 TSval=1150763862 TSecr=1150763817
10 1.047332587 127.0.0.1 127.0.0.1 TCP 32807 55584 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1150763862 TSecr=1150763862
11 1.259047234 127.0.0.1 127.0.0.1 TCP 32807 [TCP Retransmission] 55584 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1150764075 TSecr=1150763862
12 1.259662243 127.0.0.1 127.0.0.1 TCP 78 54321 → 55584 [ACK] Seq=1 Ack=130965 Win=65536 Len=0 TSval=1150764075 TSecr=1150764075 SLE=98224 SRE=130965
13 2.001692609 127.0.0.1 127.0.0.1 TCP 32834 55584 → 54321 [ACK] Seq=130965 Ack=1 Win=65536 Len=32768 TSval=1150764817 TSecr=1150764075
14 2.001713464 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=163733 Win=48768 Len=0 TSval=1150764817 TSecr=1150764817
15 2.001736823 127.0.0.1 127.0.0.1 TCP 32834 55584 → 54321 [PSH, ACK] Seq=163733 Ack=1 Win=65536 Len=32768 TSval=1150764817 TSecr=1150764075
16 2.001944749 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=196501 Win=65536 Len=0 TSval=1150764818 TSecr=1150764817
17 2.001970981 127.0.0.1 127.0.0.1 TCP 32834 55584 → 54321 [ACK] Seq=196501 Ack=1 Win=65536 Len=32768 TSval=1150764818 TSecr=1150764818
18 2.001983818 127.0.0.1 127.0.0.1 TCP 32834 [TCP Window Full] 55584 → 54321 [PSH, ACK] Seq=229269 Ack=1 Win=65536 Len=32768 TSval=1150764818 TSecr=1150764818
19 2.001991166 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=229269 Win=196480 Len=0 TSval=1150764818 TSecr=1150764818
20 2.001997829 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=262037 Win=327424 Len=0 TSval=1150764818 TSecr=1150764818
21 3.002752967 127.0.0.1 127.0.0.1 TCP 65549 55584 → 54321 [ACK] Seq=262037 Ack=1 Win=65536 Len=65483 TSval=1150765818 TSecr=1150764818
22 3.002777248 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=327520 Win=458496 Len=0 TSval=1150765818 TSecr=1150765818
23 3.002819226 127.0.0.1 127.0.0.1 TCP 65549 55584 → 54321 [ACK] Seq=327520 Ack=1 Win=65536 Len=65483 TSval=1150765819 TSecr=1150764818
24 3.002825450 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=393003 Win=589440 Len=0 TSval=1150765819 TSecr=1150765819
25 3.002846064 127.0.0.1 127.0.0.1 TCP 172 55584 → 54321 [PSH, ACK] Seq=393003 Ack=1 Win=65536 Len=106 TSval=1150765819 TSecr=1150764818
26 3.002850102 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=393109 Win=589440 Len=0 TSval=1150765819 TSecr=1150765819
27 4.053226058 127.0.0.1 127.0.0.1 TCP 65549 55584 → 54321 [ACK] Seq=393109 Ack=1 Win=65536 Len=65483 TSval=1150766869 TSecr=1150765819
28 4.053268787 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=458592 Win=720384 Len=0 TSval=1150766869 TSecr=1150766869
29 4.053455143 127.0.0.1 127.0.0.1 TCP 65549 55584 → 54321 [ACK] Seq=458592 Ack=1 Win=65536 Len=65483 TSval=1150766869 TSecr=1150765819
30 4.053481544 127.0.0.1 127.0.0.1 TCP 66 54321 → 55584 [ACK] Seq=1 Ack=524075 Win=851328 Len=0 TSval=1150766869 TSecr=1150766869
31 4.053574502 127.0.0.1 127.0.0.1 TCP 172 55584 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1150766869 TSecr=1150765819
Frame 1: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface lo, id 0
Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)


****
Run #1: Time = 49ms; Speed = 40.816MB/s
Run #2: Time = 326ms; Speed = 6.135MB/s
Run #3: Time = 412ms; Speed = 4.854MB/s
Run #4: Time = 454ms; Speed = 4.405MB/s
Run #5: Time = 480ms; Speed = 4.167MB/s
Average time: 344.200ms
Average bandwidth: 12.076MB/s
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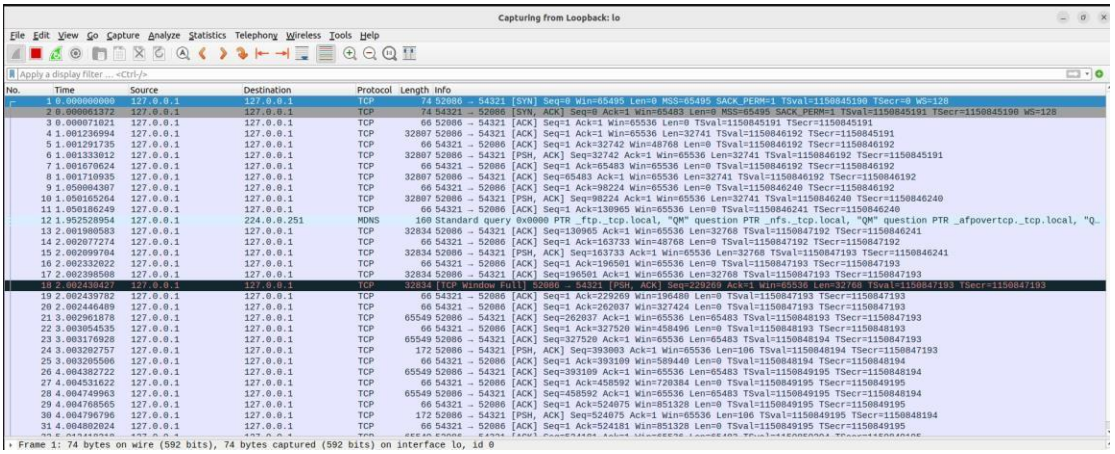
5 אחוז איבוד-


Capturing from Loopback: lo
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Apply a display filter ... <Ctrl-/>
No. Time Source Destination Protocol Length Info
1 0.000000000 127.0.0.1 127.0.0.1 TCP 74 52086 → 54321 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=1150845190 TSecr=0 WS=128
2 0.000051372 127.0.0.1 127.0.0.1 TCP 74 54321 → 52086 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1150845191 TSecr=1150845190 WS=128
3 0.000071021 127.0.0.1 127.0.0.1 TCP 66 52086 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1150845191 TSecr=1150845191
4 1.001236994 127.0.0.1 127.0.0.1 TCP 32807 52086 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=32741 TSval=1150846192 TSecr=1150845191
5 1.001291735 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=32742 Win=48768 Len=0 TSval=1150846192 TSecr=1150846192
6 1.001333012 127.0.0.1 127.0.0.1 TCP 32807 52086 → 54321 [PSH, ACK] Seq=32742 Ack=1 Win=65536 Len=32741 TSval=1150846192 TSecr=1150845191
7 1.001670624 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=65483 Win=65536 Len=0 TSval=1150846192 TSecr=1150846192
8 1.001710935 127.0.0.1 127.0.0.1 TCP 32807 52086 → 54321 [ACK] Seq=65483 Ack=1 Win=65536 Len=32741 TSval=1150846192 TSecr=1150846192
9 1.050004307 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=98224 Win=65536 Len=0 TSval=1150846240 TSecr=1150846192
10 1.050165264 127.0.0.1 127.0.0.1 TCP 32807 52086 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1150846240 TSecr=1150846240
11 1.050186249 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=130965 Win=65536 Len=0 TSval=1150846241 TSecr=1150846240
12 1.952528954 127.0.0.1 224.0.0.251 MDNS 160 Standard query 0x0000 PTR _ftp._tcp.local, "QM" question PTR _nfs._tcp.local, "QM" question PTR _afpovertcp._tcp.local, "Q…
13 2.001980583 127.0.0.1 127.0.0.1 TCP 32834 52086 → 54321 [ACK] Seq=130965 Ack=1 Win=65536 Len=32768 TSval=1150847192 TSecr=1150846241
14 2.002077274 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=163733 Win=48768 Len=0 TSval=1150847192 TSecr=1150847192
15 2.002099704 127.0.0.1 127.0.0.1 TCP 32834 52086 → 54321 [PSH, ACK] Seq=163733 Ack=1 Win=65536 Len=32768 TSval=1150847193 TSecr=1150846241
16 2.002332022 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=196501 Win=65536 Len=0 TSval=1150847193 TSecr=1150847193
17 2.002398508 127.0.0.1 127.0.0.1 TCP 32834 52086 → 54321 [ACK] Seq=196501 Ack=1 Win=65536 Len=32768 TSval=1150847193 TSecr=1150847193
18 2.002430427 127.0.0.1 127.0.0.1 TCP 32834 [TCP Window Full] 52086 → 54321 [PSH, ACK] Seq=229269 Ack=1 Win=65536 Len=32768 TSval=1150847193 TSecr=1150847193
19 2.002439782 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=229269 Win=196480 Len=0 TSval=1150847193 TSecr=1150847193
20 2.002446489 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=262037 Win=327424 Len=0 TSval=1150847193 TSecr=1150847193
21 3.002961878 127.0.0.1 127.0.0.1 TCP 65549 52086 → 54321 [ACK] Seq=262037 Ack=1 Win=65536 Len=65483 TSval=1150848193 TSecr=1150847193
22 3.003054535 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=327520 Win=458496 Len=0 TSval=1150848193 TSecr=1150848193
23 3.003176928 127.0.0.1 127.0.0.1 TCP 65549 52086 → 54321 [ACK] Seq=327520 Ack=1 Win=65536 Len=65483 TSval=1150848194 TSecr=1150847193
24 3.003202757 127.0.0.1 127.0.0.1 TCP 172 52086 → 54321 [PSH, ACK] Seq=393003 Ack=1 Win=65536 Len=106 TSval=1150848194 TSecr=1150847193
25 3.003205506 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=393109 Win=589440 Len=0 TSval=1150848194 TSecr=1150848194
26 4.004382722 127.0.0.1 127.0.0.1 TCP 65549 52086 → 54321 [ACK] Seq=393109 Ack=1 Win=65536 Len=65483 TSval=1150849195 TSecr=1150848194
27 4.004531622 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=458592 Win=720384 Len=0 TSval=1150849195 TSecr=1150849195
28 4.004749963 127.0.0.1 127.0.0.1 TCP 65549 52086 → 54321 [ACK] Seq=458592 Ack=1 Win=65536 Len=65483 TSval=1150849195 TSecr=1150848194
29 4.004768565 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=524075 Win=851328 Len=0 TSval=1150849195 TSecr=1150849195
30 4.004796796 127.0.0.1 127.0.0.1 TCP 172 52086 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1150849195 TSecr=1150848194
31 4.004882024 127.0.0.1 127.0.0.1 TCP 66 54321 → 52086 [ACK] Seq=1 Ack=524181 Win=851328 Len=0 TSval=1150849195 TSecr=1150849195
Frame 1: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface lo, id 0

```
*********************************************
Run #1: Time = 41ms; Speed = 48.780MB/s

Run #2: Time = 453ms; Speed = 4.415MB/s

Run #3: Time = 385ms; Speed = 5.195MB/s

Run #4: Time = 450ms; Speed = 4.444MB/s

Run #5: Time = 411ms; Speed = 4.866MB/s

Average time: 348.000ms

Average bandwidth: 13.540MB/s

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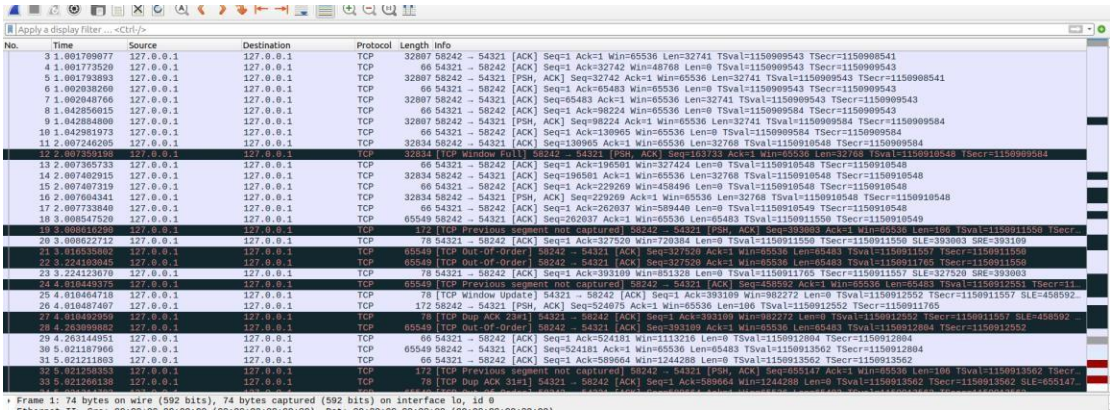
10 אחוז איבוד-




```
*********************************************
Run #1: Time = 69ms; Speed = 28.986MB/s

Run #2: Time = 2542ms; Speed = 0.787MB/s

Run #3: Time = 2020ms; Speed = 0.990MB/s

Run #4: Time = 79ms; Speed = 25.316MB/s

Run #5: Time = 483ms; Speed = 4.141MB/s

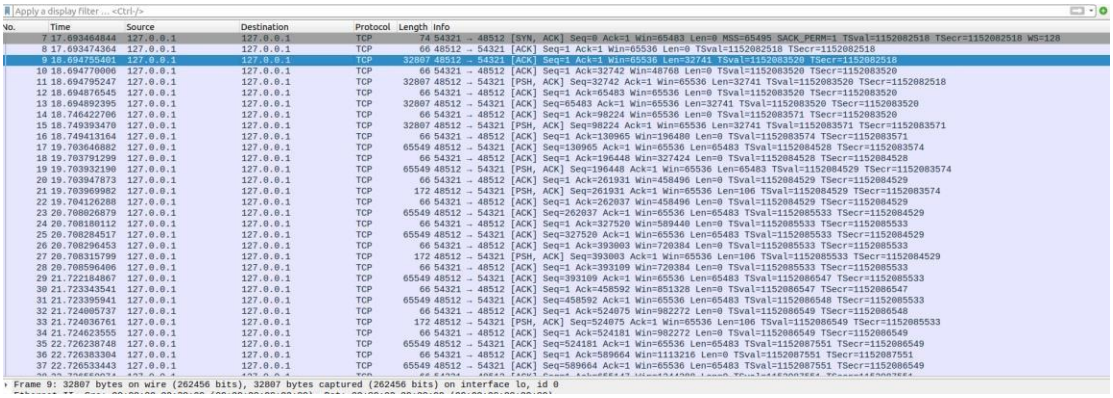
Average time: 1038.600ms

Average bandwidth: 12.044MB/s

*********************************************
```

הקלטות עבור cubic:

אפס אחוז איבוד-



```
No.  Time          Source      Destination  Protocol  Length  Info
  7  17.693464844  127.0.0.1   127.0.0.1    TCP       74      54321 → 48512 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1152082518 TSecr=1152082518 WS=128
  8  17.693474364  127.0.0.1   127.0.0.1    TCP       66      48512 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1152082518 TSecr=1152082518
  9  18.694755401  127.0.0.1   127.0.0.1    TCP       32807   48512 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=32741 TSval=1152083520 TSecr=1152082518
 10  18.694770006  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=32742 Win=48768 Len=0 TSval=1152083520 TSecr=1152083520
 11  18.694795247  127.0.0.1   127.0.0.1    TCP       32807   48512 → 54321 [PSH, ACK] Seq=32742 Ack=1 Win=65536 Len=32741 TSval=1152083520 TSecr=1152082518
 12  18.694876545  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=65483 Win=65536 Len=0 TSval=1152083520 TSecr=1152083520
 13  18.694892395  127.0.0.1   127.0.0.1    TCP       32807   48512 → 54321 [ACK] Seq=65483 Ack=1 Win=65536 Len=32741 TSval=1152083520 TSecr=1152083520
 14  18.746422706  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=98224 Win=65536 Len=0 TSval=1152083571 TSecr=1152083520
 15  18.749393470  127.0.0.1   127.0.0.1    TCP       32807   48512 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1152083571 TSecr=1152083571
 16  18.749413164  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=130965 Win=196480 Len=0 TSval=1152083574 TSecr=1152083571
 17  19.703646882  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=130965 Ack=1 Win=65536 Len=65483 TSval=1152084528 TSecr=1152083574
 18  19.703791299  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=196448 Win=327424 Len=0 TSval=1152084528 TSecr=1152084528
 19  19.703932190  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [PSH, ACK] Seq=196448 Ack=1 Win=65536 Len=65483 TSval=1152084529 TSecr=1152083574
 20  19.703947873  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=261931 Win=458496 Len=0 TSval=1152084529 TSecr=1152084529
 21  19.703969982  127.0.0.1   127.0.0.1    TCP       172     48512 → 54321 [PSH, ACK] Seq=261931 Ack=1 Win=65536 Len=106 TSval=1152084529 TSecr=1152083574
 22  19.704126288  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=262037 Win=458496 Len=0 TSval=1152084529 TSecr=1152084529
 23  20.708826879  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=262037 Ack=1 Win=65536 Len=65483 TSval=1152085533 TSecr=1152084529
 24  20.708180112  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=327520 Win=589440 Len=0 TSval=1152085533 TSecr=1152085533
 25  20.708284517  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=327520 Ack=1 Win=65536 Len=65483 TSval=1152085533 TSecr=1152084529
 26  20.708296453  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=393003 Win=720384 Len=0 TSval=1152085533 TSecr=1152085533
 27  20.708315799  127.0.0.1   127.0.0.1    TCP       172     48512 → 54321 [PSH, ACK] Seq=393003 Ack=1 Win=65536 Len=106 TSval=1152085533 TSecr=1152084529
 28  20.708596406  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=393109 Win=720384 Len=0 TSval=1152085533 TSecr=1152085533
 29  21.722184867  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=393109 Ack=1 Win=65536 Len=65483 TSval=1152086547 TSecr=1152085533
 30  21.723343541  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=458592 Win=851328 Len=0 TSval=1152086547 TSecr=1152086547
 31  21.723395941  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=458592 Ack=1 Win=65536 Len=65483 TSval=1152086548 TSecr=1152085533
 32  21.724005737  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=524075 Win=982272 Len=0 TSval=1152086549 TSecr=1152086548
 33  21.724036761  127.0.0.1   127.0.0.1    TCP       172     48512 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1152086549 TSecr=1152085533
 34  21.724623555  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=524181 Win=982272 Len=0 TSval=1152086549 TSecr=1152086549
 35  22.726238748  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=524181 Ack=1 Win=65536 Len=65483 TSval=1152087551 TSecr=1152086549
 36  22.726383304  127.0.0.1   127.0.0.1    TCP       66      54321 → 48512 [ACK] Seq=1 Ack=589664 Win=1113216 Len=0 TSval=1152087551 TSecr=1152087551
 37  22.726533443  127.0.0.1   127.0.0.1    TCP       65549   48512 → 54321 [ACK] Seq=589664 Ack=1 Win=65536 Len=65483 TSval=1152087551 TSecr=1152086549
Frame 9: 32807 bytes on wire (262456 bits), 32807 bytes captured (262456 bits) on interface lo, id 0
```

```
**********************************************
Run #1: Time = 34ms; Speed = 58.824MB/s

Run #2: Time = 208ms; Speed = 9.615MB/s

Run #3: Time = 769ms; Speed = 2.601MB/s

Run #4: Time = 362ms; Speed = 5.525MB/s

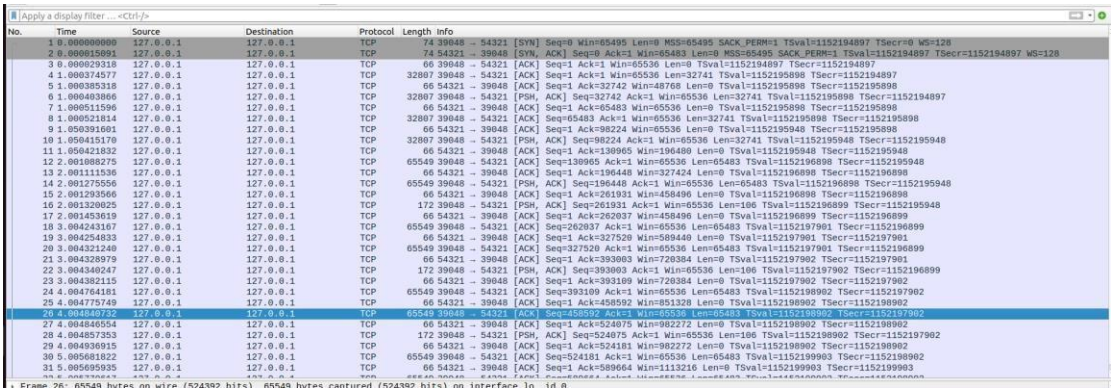
Run #5: Time = 830ms; Speed = 2.410MB/s

Average time: 440.600ms

Average bandwidth: 15.795MB/s

**********************************************
```

2 אחוז איבוד-



```
No.  Time          Source      Destination  Protocol  Length  Info
  1  0.000000000   127.0.0.1   127.0.0.1    TCP       74      39048 → 54321 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=1152194897 TSecr=0 WS=128
  2  0.000015091   127.0.0.1   127.0.0.1    TCP       74      54321 → 39048 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1152194897 TSecr=1152194897 WS=128
  3  0.000029318   127.0.0.1   127.0.0.1    TCP       66      39048 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1152194897 TSecr=1152194897
  4  1.000374577   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1152195898 TSecr=1152194897
  5  1.000385318   127.0.0.1   127.0.0.1    TCP       32807   39048 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=32741 TSval=1152195898 TSecr=1152194897
  6  1.000403866   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=32742 Win=48768 Len=0 TSval=1152195898 TSecr=1152195898
  7  1.000511596   127.0.0.1   127.0.0.1    TCP       32807   39048 → 54321 [PSH, ACK] Seq=32742 Ack=1 Win=65536 Len=32741 TSval=1152195898 TSecr=1152194897
  8  1.000521814   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=65483 Ack=1 Win=65536 Len=0 TSval=1152195898 TSecr=1152195898
  9  1.050391601   127.0.0.1   127.0.0.1    TCP       32807   39048 → 54321 [ACK] Seq=65483 Ack=1 Win=65536 Len=32741 TSval=1152195898 TSecr=1152195898
 10  1.050415170   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=98224 Win=65536 Len=0 TSval=1152195948 TSecr=1152195898
 11  1.050421832   127.0.0.1   127.0.0.1    TCP       32807   39048 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1152195948 TSecr=1152195948
 12  2.001088275   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=130965 Win=196480 Len=0 TSval=1152195948 TSecr=1152195948
 13  2.001111536   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=130965 Ack=1 Win=65536 Len=65483 TSval=1152196898 TSecr=1152195948
 14  2.001275556   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=196448 Win=327424 Len=0 TSval=1152196898 TSecr=1152196898
 15  2.001293566   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [PSH, ACK] Seq=196448 Ack=1 Win=65536 Len=65483 TSval=1152196898 TSecr=1152195948
 16  2.001320025   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=261931 Win=458496 Len=0 TSval=1152196898 TSecr=1152196898
 17  2.001453619   127.0.0.1   127.0.0.1    TCP       172     39048 → 54321 [PSH, ACK] Seq=261931 Ack=1 Win=65536 Len=106 TSval=1152196899 TSecr=1152195948
 18  3.004243167   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=262037 Win=458496 Len=0 TSval=1152196899 TSecr=1152196899
 19  3.004254833   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=262037 Ack=1 Win=65536 Len=65483 TSval=1152197901 TSecr=1152196899
 20  3.004321240   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=327520 Win=589440 Len=0 TSval=1152197901 TSecr=1152197901
 21  3.004328979   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=327520 Ack=1 Win=65536 Len=65483 TSval=1152197901 TSecr=1152196899
 22  3.004340247   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=393003 Win=720384 Len=0 TSval=1152197902 TSecr=1152197901
 23  3.004382115   127.0.0.1   127.0.0.1    TCP       172     39048 → 54321 [PSH, ACK] Seq=393003 Ack=1 Win=65536 Len=106 TSval=1152197902 TSecr=1152196899
 24  4.004764181   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=393109 Win=720384 Len=0 TSval=1152197902 TSecr=1152197902
 25  4.004775749   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=393109 Ack=1 Win=65536 Len=65483 TSval=1152198902 TSecr=1152197902
 26  4.004840732   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=458592 Win=851328 Len=0 TSval=1152198902 TSecr=1152198902
 27  4.004846554   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=458592 Ack=1 Win=65536 Len=65483 TSval=1152198902 TSecr=1152197902
 28  4.004857353   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=524075 Win=982272 Len=0 TSval=1152198902 TSecr=1152198902
 29  4.004936915   127.0.0.1   127.0.0.1    TCP       172     39048 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1152198902 TSecr=1152197902
 30  5.005681822   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=524181 Win=982272 Len=0 TSval=1152198902 TSecr=1152198902
 31  5.005695935   127.0.0.1   127.0.0.1    TCP       65549   39048 → 54321 [ACK] Seq=524181 Ack=1 Win=65536 Len=65483 TSval=1152199903 TSecr=1152198902
 32  5.005730761   127.0.0.1   127.0.0.1    TCP       66      54321 → 39048 [ACK] Seq=1 Ack=589664 Win=1113216 Len=0 TSval=1152199903 TSecr=1152199903
Frame 26: 65549 bytes on wire (524392 bits), 65549 bytes captured (524392 bits) on interface lo, id 0
```

```
**********************************************
Run #1: Time = 31ms; Speed = 64.516MB/s

Run #2: Time = 427ms; Speed = 4.684MB/s

Run #3: Time = 623ms; Speed = 3.210MB/s

Run #4: Time = 544ms; Speed = 3.676MB/s

Run #5: Time = 476ms; Speed = 4.202MB/s

Average time: 420.200ms

Average bandwidth: 16.058MB/s

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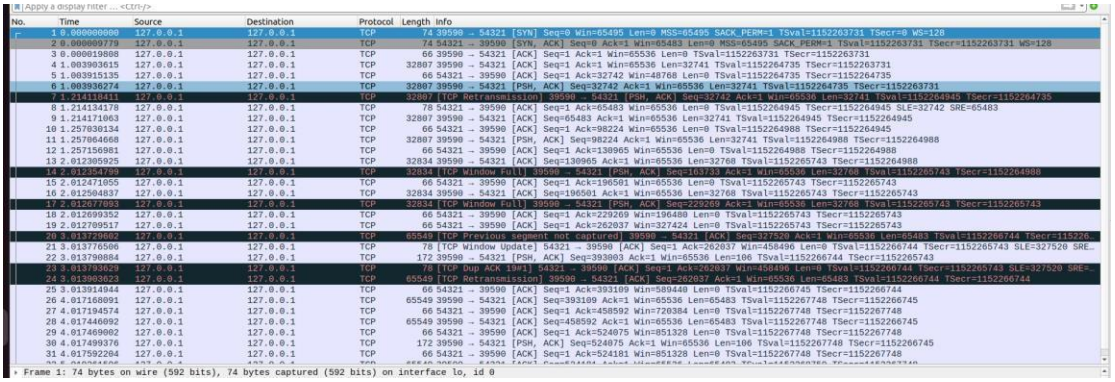
5 אחוז איבוד-

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**********************************************
Run #1: Time = 57ms; Speed = 35.088MB/s

Run #2: Time = 368ms; Speed = 5.435MB/s

Run #3: Time = 704ms; Speed = 2.841MB/s

Run #4: Time = 537ms; Speed = 3.724MB/s

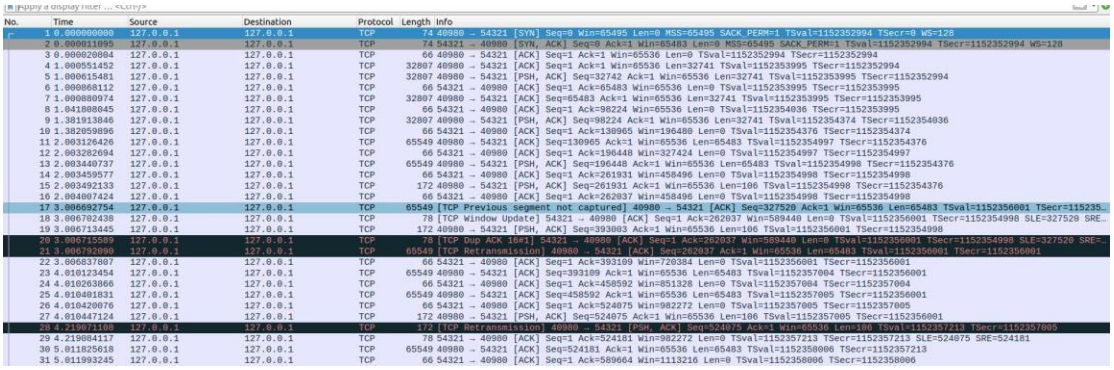
Run #5: Time = 546ms; Speed = 3.663MB/s

Average time: 442.400ms

Average bandwidth: 10.150MB/s

**********************************************
```

10 אחוז איבוד-



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	127.0.0.1	127.0.0.1	TCP	74	40980 → 54321 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM=1 TSval=1152352994 TSecr=0 WS=128
2	0.000011095	127.0.0.1	127.0.0.1	TCP	74	54321 → 40980 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM=1 TSval=1152352994 TSecr=1152352994 WS=128
3	0.000020804	127.0.0.1	127.0.0.1	TCP	66	40980 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=1152352994 TSecr=1152352994
4	1.000051452	127.0.0.1	127.0.0.1	TCP	32807	40980 → 54321 [ACK] Seq=1 Ack=1 Win=65536 Len=32741 TSval=1152353995 TSecr=1152352994
5	1.000615481	127.0.0.1	127.0.0.1	TCP	32807	40980 → 54321 [PSH, ACK] Seq=32742 Ack=1 Win=65536 Len=32741 TSval=1152353995 TSecr=1152352994
6	1.000868112	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=65483 Win=65536 Len=0 TSval=1152353995 TSecr=1152353995
7	1.000880974	127.0.0.1	127.0.0.1	TCP	32807	40980 → 54321 [ACK] Seq=65483 Ack=1 Win=65536 Len=32741 TSval=1152353995 TSecr=1152353995
8	1.041808045	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=98224 Win=65536 Len=0 TSval=1152354036 TSecr=1152353995
9	1.381913846	127.0.0.1	127.0.0.1	TCP	32807	40980 → 54321 [PSH, ACK] Seq=98224 Ack=1 Win=65536 Len=32741 TSval=1152354374 TSecr=1152354036
10	1.382059896	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=130965 Win=196480 Len=0 TSval=1152354376 TSecr=1152354374
11	2.003126426	127.0.0.1	127.0.0.1	TCP	65549	40980 → 54321 [ACK] Seq=130965 Ack=1 Win=65536 Len=65483 TSval=1152354997 TSecr=1152354376
12	2.003282694	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=196448 Win=327424 Len=0 TSval=1152354997 TSecr=1152354997
13	2.003440737	127.0.0.1	127.0.0.1	TCP	65549	40980 → 54321 [PSH, ACK] Seq=196448 Ack=1 Win=65536 Len=65483 TSval=1152354998 TSecr=1152354376
14	2.003459577	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=261931 Win=458496 Len=0 TSval=1152354998 TSecr=1152354998
15	2.003492133	127.0.0.1	127.0.0.1	TCP	172	40980 → 54321 [PSH, ACK] Seq=261931 Ack=1 Win=65536 Len=106 TSval=1152354998 TSecr=1152354376
16	2.004007424	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=262037 Win=458496 Len=0 TSval=1152354998 TSecr=1152354998
17	3.006692754	127.0.0.1	127.0.0.1	TCP	65549	[TCP Previous segment not captured] 40980 → 54321 [ACK] Seq=327520 Ack=1 Win=65536 Len=65483 TSval=1152356001 TSecr=115235…
18	3.006702438	127.0.0.1	127.0.0.1	TCP	78	[TCP Window Update] 54321 → 40980 [ACK] Seq=1 Ack=262037 Win=589440 Len=0 TSval=1152356001 TSecr=1152354998 SLE=327520 SRE…
19	3.006713445	127.0.0.1	127.0.0.1	TCP	172	40980 → 54321 [PSH, ACK] Seq=393003 Ack=1 Win=65536 Len=106 TSval=1152356001 TSecr=1152354998
20	3.006715589	127.0.0.1	127.0.0.1	TCP	78	[TCP Dup ACK 16#1] 54321 → 40980 [ACK] Seq=1 Ack=262037 Win=589440 Len=0 TSval=1152356001 TSecr=1152354998 SLE=327520 SRE=…
21	3.006792090	127.0.0.1	127.0.0.1	TCP	65549	[TCP Retransmission] 40980 → 54321 [ACK] Seq=262037 Ack=1 Win=65536 Len=65483 TSval=1152356001 TSecr=1152356001
22	3.006837807	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=393109 Win=720384 Len=0 TSval=1152356001 TSecr=1152356001
23	4.010123454	127.0.0.1	127.0.0.1	TCP	65549	40980 → 54321 [ACK] Seq=393109 Ack=1 Win=65536 Len=65483 TSval=1152357004 TSecr=1152356001
24	4.010263866	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=458592 Win=851328 Len=0 TSval=1152357004 TSecr=1152357004
25	4.010491831	127.0.0.1	127.0.0.1	TCP	65549	40980 → 54321 [ACK] Seq=458592 Ack=1 Win=65536 Len=65483 TSval=1152357005 TSecr=1152356001
26	4.010420076	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=524075 Win=982272 Len=0 TSval=1152357005 TSecr=1152357005
27	4.010447124	127.0.0.1	127.0.0.1	TCP	172	40980 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1152357005 TSecr=1152356001
28	4.219071108	127.0.0.1	127.0.0.1	TCP	172	[TCP Retransmission] 40980 → 54321 [PSH, ACK] Seq=524075 Ack=1 Win=65536 Len=106 TSval=1152357213 TSecr=1152357005
29	4.219084117	127.0.0.1	127.0.0.1	TCP	78	54321 → 40980 [ACK] Seq=1 Ack=524181 Win=982272 Len=0 TSval=1152357213 TSecr=1152357213 SLE=524075 SRE=524181
30	5.011825618	127.0.0.1	127.0.0.1	TCP	65549	40980 → 54321 [ACK] Seq=524181 Ack=1 Win=65536 Len=65483 TSval=1152358006 TSecr=1152357213
31	5.011993245	127.0.0.1	127.0.0.1	TCP	66	54321 → 40980 [ACK] Seq=1 Ack=589664 Win=1113216 Len=0 TSval=1152358006 TSecr=1152358006

```
*****************************************
Run #1: Time = 46ms; Speed = 43.478MB/s

Run #2: Time = 753ms; Speed = 2.656MB/s

Run #3: Time = 391ms; Speed = 5.115MB/s

Run #4: Time = 532ms; Speed = 3.759MB/s

Run #5: Time = 885ms; Speed = 2.260MB/s

Average time: 521.400ms

Average bandwidth: 11.454MB/s

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