

LAMPIRAN

Lampiran 1. Tes Ping Pada BAB IV Poin C. pengujian QoS menggunakan *command prompt/windows powershell*

A screenshot of a Windows Command Prompt window titled "Command Prompt". The window displays the output of a continuous ping command to the IP address 216.239.38.120. The first line shows the IP address being targeted. Subsequent lines show "Request timed out." repeated eleven times. Then, four lines show "Reply from 10.10.10.1: Destination net unreachable." followed by another "Request timed out.". This is followed by another "Request timed out.", then three more "Request timed out." messages, and finally another "Request timed out.". The next line shows "Ping statistics for 216.239.38.120:" followed by summary statistics: "Packets: Sent = 156, Received = 75, Lost = 81 (51% loss), Approximate round trip times in milli-seconds: Minimum = 45ms, Maximum = 116ms, Average = 57ms". The prompt ends with "Control-C" and the user's name "AC" at the C:\Users\Bang_Rooy> path. The taskbar at the bottom shows various application icons and the system clock indicating 06:00 on 01/08/2026.

```

Windows PowerShell
Reply from 1.1.1.1: bytes=32 time=55ms TTL=51
Reply from 1.1.1.1: bytes=32 time=50ms TTL=51
Reply from 1.1.1.1: bytes=32 time=45ms TTL=51
Reply from 1.1.1.1: bytes=32 time=48ms TTL=52
Reply from 1.1.1.1: bytes=32 time=43ms TTL=52
Reply from 1.1.1.1: bytes=32 time=51ms TTL=51
Reply from 1.1.1.1: bytes=32 time=49ms TTL=51
Reply from 1.1.1.1: bytes=32 time=43ms TTL=51
Reply from 1.1.1.1: bytes=32 time=52ms TTL=52
Reply from 1.1.1.1: bytes=32 time=42ms TTL=52
Reply from 1.1.1.1: bytes=32 time=40ms TTL=52
Reply from 1.1.1.1: bytes=32 time=116ms TTL=51
Reply from 1.1.1.1: bytes=32 time=42ms TTL=51
Reply from 1.1.1.1: bytes=32 time=47ms TTL=51
Reply from 1.1.1.1: bytes=32 time=44ms TTL=51
Reply from 1.1.1.1: bytes=32 time=54ms TTL=51
Reply from 1.1.1.1: bytes=32 time=48ms TTL=51
Reply from 1.1.1.1: bytes=32 time=54ms TTL=51
Reply from 1.1.1.1: bytes=32 time=51ms TTL=52
Reply from 1.1.1.1: bytes=32 time=54ms TTL=51
Reply from 1.1.1.1: bytes=32 time=44ms TTL=51
Reply from 1.1.1.1: bytes=32 time=54ms TTL=51
Reply from 1.1.1.1: bytes=32 time=45ms TTL=52
Reply from 1.1.1.1: bytes=32 time=48ms TTL=51

Ping statistics for 1.1.1.1:
    Packets: Sent = 100, Received = 95, Lost = 5 (5% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 38ms, Maximum = 1232ms, Average = 69ms

PS C:\Users\Bang_Rooy>

```

```

C:\Users\Bang_Rooy>ping 8.8.8.8
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=28ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=29ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=36ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=29ms TTL=115
Reply from 8.8.8.8: bytes=32 time=33ms TTL=115
Reply from 8.8.8.8: bytes=32 time=37ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=25ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=28ms TTL=115
Reply from 8.8.8.8: bytes=32 time=25ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=36ms TTL=115

Ping statistics for 8.8.8.8:
    Packets: Sent = 100, Received = 100, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 24ms, Maximum = 73ms, Average = 28ms

C:\Users\Bang_Rooy>

```

[illegible]

```
Windows PowerShell
Reply from 216.239.38.120: bytes=32 time=52ms TTL=113
Reply from 216.239.38.120: bytes=32 time=50ms TTL=113
Reply from 216.239.38.120: bytes=32 time=41ms TTL=113
Reply from 216.239.38.120: bytes=32 time=54ms TTL=113
Reply from 216.239.38.120: bytes=32 time=70ms TTL=113
Reply from 216.239.38.120: bytes=32 time=47ms TTL=113
Reply from 216.239.38.120: bytes=32 time=52ms TTL=113
Reply from 216.239.38.120: bytes=32 time=45ms TTL=113
Reply from 216.239.38.120: bytes=32 time=51ms TTL=113
Reply from 216.239.38.120: bytes=32 time=53ms TTL=113
Reply from 216.239.38.120: bytes=32 time=39ms TTL=113
Reply from 216.239.38.120: bytes=32 time=50ms TTL=113
Reply from 216.239.38.120: bytes=32 time=41ms TTL=113
Reply from 216.239.38.120: bytes=32 time=50ms TTL=113
Reply from 216.239.38.120: bytes=32 time=49ms TTL=113
Reply from 216.239.38.120: bytes=32 time=53ms TTL=113
Reply from 216.239.38.120: bytes=32 time=47ms TTL=113
Reply from 216.239.38.120: bytes=32 time=60ms TTL=113
Reply from 216.239.38.120: bytes=32 time=64ms TTL=113
Reply from 216.239.38.120: bytes=32 time=66ms TTL=113
Reply from 216.239.38.120: bytes=32 time=67ms TTL=113
Reply from 216.239.38.120: bytes=32 time=47ms TTL=113
Reply from 216.239.38.120: bytes=32 time=101ms TTL=113
Reply from 216.239.38.120: bytes=32 time=46ms TTL=113
Reply from 216.239.38.120: bytes=32 time=38ms TTL=113
Reply from 216.239.38.120: bytes=32 time=45ms TTL=113
Reply from 216.239.38.120: bytes=32 time=62ms TTL=113
Reply from 216.239.38.120: bytes=32 time=51ms TTL=113
Reply from 216.239.38.120: bytes=32 time=41ms TTL=113
Reply from 216.239.38.120: bytes=32 time=49ms TTL=113
Reply from 216.239.38.120: bytes=32 time=50ms TTL=113
Reply from 216.239.38.120: bytes=32 time=40ms TTL=113
Reply from 216.239.38.120: bytes=32 time=46ms TTL=113
Reply from 216.239.38.120: bytes=32 time=53ms TTL=113

Ping statistics for 216.239.38.120:
    Packets: Sent = 100, Received = 100, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 38ms, Maximum = 94ms, Average = 71ms

PS C:\Users\Bang_Rooj>
```

```
Command Prompt
Reply from 8.8.8.8: bytes=32 time=36ms TTL=115
Reply from 8.8.8.8: bytes=32 time=28ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=25ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=28ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=35ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=29ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=24ms TTL=115
Reply from 8.8.8.8: bytes=32 time=25ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=25ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=26ms TTL=115
Reply from 8.8.8.8: bytes=32 time=36ms TTL=115
Reply from 8.8.8.8: bytes=32 time=27ms TTL=115

Ping statistics for 8.8.8.8:
    Packets: Sent = 100, Received = 100, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 24ms, Maximum = 132ms, Average = 29ms

C:\Users\Bang_Rooj>
```

dayat@45.149.93.39:6176 (MikroTik) HEX WinBox

Workspace: <com> RouterOS 7.23.3 available Safe Mode

Terminal

```
2 192.168.2.1 56 64 781us
3 192.168.2.1 56 64 790us
4 192.168.2.1 56 64 797us
5 192.168.2.1 56 64 882us
6 192.168.2.1 56 64 775us
7 192.168.2.1 56 64 733us
8 192.168.2.1 56 64 871us
9 192.168.2.1 56 64 721us
10 192.168.2.1 56 64 867us
11 192.168.2.1 56 64 866us
12 192.168.2.1 56 64 657us
13 192.168.2.1 56 64 849us
14 192.168.2.1 56 64 683us
15 192.168.2.1 56 64 802us
16 192.168.2.1 56 64 714us
17 192.168.2.1 56 64 797us
18 192.168.2.1 56 64 665us
19 192.168.2.1 56 64 814us
sent=20 received=20 packet-loss=0% min-rtt=657us avg-rtt=785us max-rtt=882us
SEQ HOST SIZE TTL TIME STATUS
20 192.168.2.1 56 64 618us
21 192.168.2.1 56 64 716us
22 192.168.2.1 56 64 690us
23 192.168.2.1 56 64 815us
24 192.168.2.1 56 64 659us
25 192.168.2.1 56 64 826us
26 192.168.2.1 56 64 620us
27 192.168.2.1 56 64 809us
28 192.168.2.1 56 64 690us
29 192.168.2.1 56 64 822us
30 192.168.2.1 56 64 673us
31 192.168.2.1 56 64 778us
32 192.168.2.1 56 64 664us
33 192.168.2.1 56 64 789us
34 192.168.2.1 56 64 690us
35 192.168.2.1 56 64 684us
36 192.168.2.1 56 64 862us
37 192.168.2.1 56 64 675us
38 192.168.2.1 56 64 785us
39 192.168.2.1 56 64 700us
sent=40 received=40 packet-loss=0% min-rtt=618us avg-rtt=756us max-rtt=882us
```

[dayat@MikroTik] >

MikroTik 45.149.93.39:6176 / mmps / HEX / 7.22.3 (stable) 2 % 186.4 MB / 60.6 MB / 256.0 MB 7d 15:56:28 2026-05-24 08:16:07

dayat@45.149.93.39:6176 (MikroTik) HEX WinBox

Workspace: <com> RouterOS 7.23.3 available Safe Mode

Terminal

```
0 74.125.130.139 56 107 36ms331us
1 74.125.130.139 56 107 24ms763us
2 74.125.130.139 56 107 27ms567us
3 74.125.130.139 56 107 26ms833us
4 74.125.130.139 56 107 27ms190us
5 74.125.130.139 56 107 26ms485us
6 74.125.130.139 56 107 24ms304us
7 74.125.130.139 56 107 26ms395us
8 74.125.130.139 56 107 26ms350us
9 74.125.130.139 56 107 26ms738us
10 74.125.130.139 56 107 26ms933us
11 74.125.130.139 56 107 26ms575us
12 74.125.130.139 56 107 26ms528us
13 74.125.130.139 56 107 26ms933us
14 74.125.130.139 56 107 27ms198us
15 74.125.130.139 56 107 26ms651us
16 74.125.130.139 56 107 27ms35us
17 74.125.130.139 56 107 27ms185us
18 74.125.130.139 56 107 24ms465us
19 74.125.130.139 56 107 26ms812us
sent=20 received=20 packet-loss=0% min-rtt=24ms304us avg-rtt=26ms966us max-rtt=36ms331us
SEQ HOST SIZE TTL TIME STATUS
20 74.125.130.139 56 107 27ms51us
21 74.125.130.139 56 107 26ms60us
22 74.125.130.139 56 107 27ms20us
23 74.125.130.139 56 107 27ms119us
24 74.125.130.139 56 107 26ms40us
25 74.125.130.139 56 107 27ms201us
26 74.125.130.139 56 107 27ms167us
27 74.125.130.139 56 107 26ms489us
28 74.125.130.139 56 107 26ms632us
29 74.125.130.139 56 107 27ms134us
30 74.125.130.139 56 107 26ms781us
31 74.125.130.139 56 107 27ms273us
32 74.125.130.139 56 107 26ms581us
33 74.125.130.139 56 107 26ms337us
34 74.125.130.139 56 107 26ms340us
35 74.125.130.139 56 107 26ms682us
36 74.125.130.139 56 107 26ms770us
37 74.125.130.139 56 107 26ms783us
38 74.125.130.139 56 107 27ms75us
39 74.125.130.139 56 107 26ms928us
sent=40 received=40 packet-loss=0% min-rtt=24ms304us avg-rtt=26ms893us max-rtt=36ms331us
```

[dayat@MikroTik] >

MikroTik 45.149.93.39:6176 / mmps / HEX / 7.22.3 (stable) 2 % 186.4 MB / 60.6 MB / 256.0 MB 7d 15:57:25 2026-05-24 08:17:05

Lampiran 2. Hasil dari pengujian Speedtest dan fast.com untuk mengukur throughput yang didapatkan secara *real time* pada saat pengujian berlangsung.





Kecepatan internet-mu adalah

150 Mbps



Latensi

Tidak dimuat

11 ms

Dimuat

31 ms

Upload

Kecepatan

44 Mbps

Klien Bener, ID 36.73.32.84 Telkom

Server(s) Tangerang, ID | Singapore, SG

⚙ Pengaturan

190MB ⬇

110MB ⬆



PING ms

5

DOWNLOAD Mbps

103.00

UPLOAD Mbps

20.62

GO

Connections

Multi

PT. Infotama Lintas Global

Bekasi

Change Server

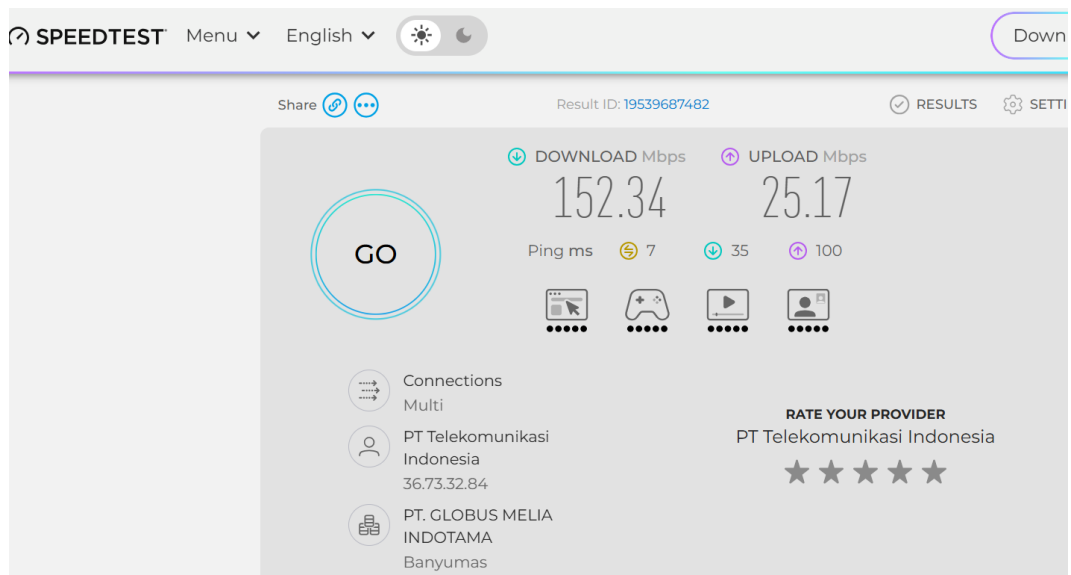
Telkom

36.70.132.41

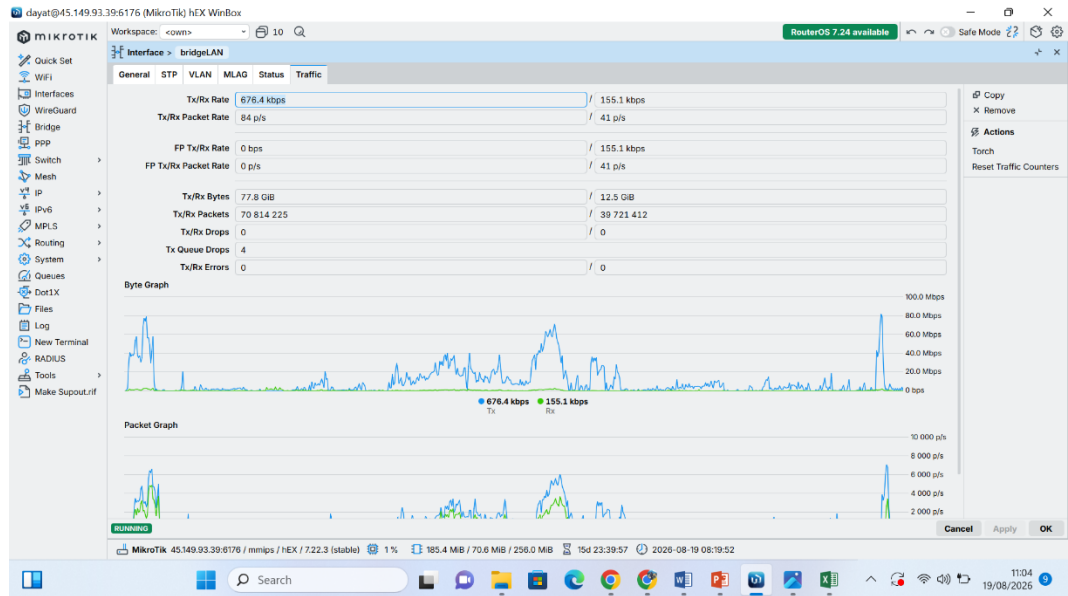
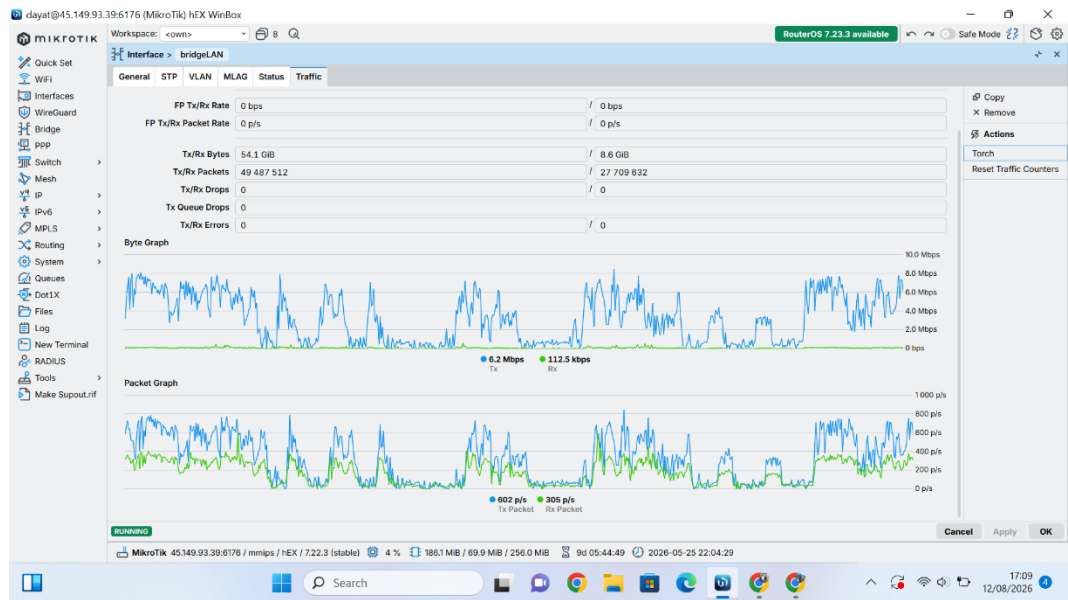
RATE YOUR PROVIDER

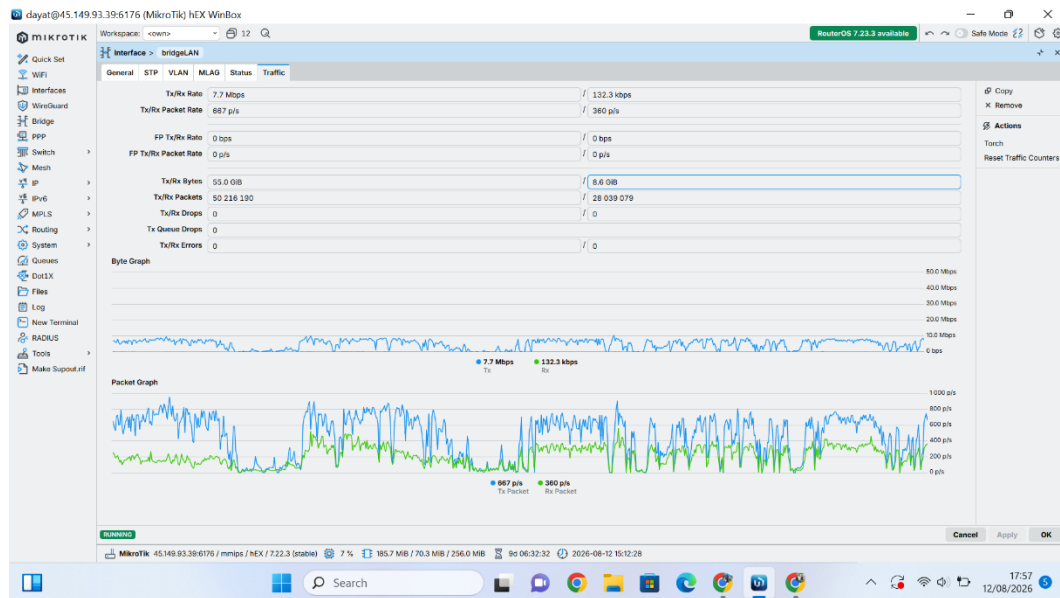
Telkom

★★★★★



Lampiran 3. hasil dari pemantauan traffic pada mikrotik





Untuk hasil dari pengolahan data tersebut bisa di akses menggunakan link beriku :

<https://github.com/BangRooy54/Wireshark/issues/2#issuecomment-5352134238>

Lampiran 4. Hasil pemantauan dan perhitungan menggunakan wireshark berdasarkan data yang ada pada saat pengujian. data bisa di lihat pada link berikut: <https://github.com/BangRooy54/Wireshark/issues/2#issuecomment-5352134238>