**Table of Contents**

[Steps 2](#_Toc150818424)

[Without VPN 2](#_Toc150818425)

[Proton VPN 2](#_Toc150818426)

[WireGuard 2](#_Toc150818427)

[Netherlands 2](#_Toc150818428)

[Japan 7](#_Toc150818429)

[USA 7](#_Toc150818430)

[Open-VPN UDP 8](#_Toc150818431)

[Open – VPN TCP 9](#_Toc150818432)

[After Subnetting 9](#_Toc150818433)

[Windscribe 10](#_Toc150818434)

[WireGuard 10](#_Toc150818435)

[IKEv2 13](#_Toc150818436)

[Stealth 13](#_Toc150818437)

[TCP 13](#_Toc150818438)

[WStunnel 13](#_Toc150818439)

[UDP 13](#_Toc150818440)

[IP 14](#_Toc150818441)

[Tunnel-Bear 15](#_Toc150818442)

[WireGuard 15](#_Toc150818443)

[IKEv2 16](#_Toc150818444)

[IP Addr 16](#_Toc150818445)

[Identifying VPN 16](#_Toc150818446)

[Proton VPN 16](#_Toc150818447)

[Windscribe 16](#_Toc150818448)

[Tunnel - Bear 16](#_Toc150818449)

[Remaining 17](#_Toc150818450)

# Steps

1. Open Wireshark and access a website without any VPN activated.
2. Identify the packets and looking into characteristics.
3. These characteristics involves:
   1. Packet Size
   2. Packet Length
   3. Response Time
   4. Average Response Time
   5. Average Length
   6. Source and Destination Port Number of both the flows
   7. Source and Destination IP of both the flows
   8. Any other Characteristic that can help us identity the packet.
4. Now, turn on the VPN and repeat the same steps.
5. Save and compare the values of both types of traffics.

# Without VPN

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sr. | Packet Length  D-S | Packet Length  S-D | Payload Size | Src. Port No. | Des. Port No. | Src. IP | Des. IP |
| 1. | **1292** – 69 – 64 – 855 – 235 – 66 – 1288 | 1292 – 119 – 1288 – 813 – **74** – **73** – **65** | 42 bits for header | 64530 | 443 | 10.7.80.11 | 172.217.17.42 |
| 2. | **1292** – 71 – 67 – 75 – | 1292 – **74 – 75** – **73** – **65** | 42 bits for header | 64915 | 443 | 10.7.80.11 | 172.217.21.36 |
| 3. |  |  |  |  |  |  |  |
| 4. |  |  |  |  |  |  |  |

QUIC Handshake from Google = 1292

QUIC Handshake from end device = 81

TCP Handshake from Google = 56

TCP Handshake from end device = 54

|  |
| --- |
| MOST Used Lengths in the Packets |
| 1292 – 128x |
| 74-75-73-71-65 |

# Proton VPN

## WireGuard

### Netherlands

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sr. | Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 1. | 122 – 138 – 154 – 1354 – 1482 | 122 – 138 – 154 – 1482 | 190.2.130.161  (190.2.130.167) | 1224 | 49898 |
| 2. | 1354 – 138 – 266 – 1402 – 1482 – 1306 | 122 – 138 – 154 | 190.2.130.161  (190.2.130.177) | 1224 | 61373 |
| 3. | 1354 – 138 – 266 – 1402 – 1482 – 1306 | 122 – 138 – 154 | 190.2.130.161  (190.2.130.168) | 51820 | 61090 |
| 4. | 1354 – 1482 – 1306 | 122 – 138 | 185.107.56.236  (185.107.56.239) | 1224 | 55548 |
| 5. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 185.107.56.236  (185.107.56.251) | 1224 | 63813 |
| 6. | 1354 – 1482 – 1306 – 1432 – 1402 | 122 – 138 – 154 | 185.107.56.236  (185.107.56.238) | 88 | 56827 |
| 7. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 185.107.56.30  (185.107.56.30) | 4500 | 49202 |
| 8. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 185.107.56.30  (185.107.56.42) | 51820 | 51847 |
| 9. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 185.107.56.30  (185.107.56.35) | 1224 | 63302 |
| 10. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 185.107.56.30  (185.107.56.40) | 1224 | 58262 |
| 11. | 1354 – 1482 – 1306 | 122 – 138 – 154 | 149.34.244.164  (149.34.244.166) | 1224 | 54294 |
| 12 |  |  | 149.34.244.164  (149.34.244.167) | 1224 | 56999 |
| 13 |  |  | 149.34.244.164  (149.34.244.166) | 88 | 52469 |
|  |  |  | 149.34.244.139  (149.34.244.143) | 443 | 58435 |
|  |  |  | 149.34.244.139  (149.34.244.140) | 88 | 64950 |
|  |  |  | 149.34.244.139  (149.34.244.141) | 88 | 58126 |
|  |  |  | 149.34.244.139  (149.34.244.142) | 1224 | 50523 |
|  |  |  | 149.34.244.174  (149.34.244.175) | 1224 | 59903 |
|  |  |  | 149.34.244.174  (149.34.244.178) | 443 | 52974 |
|  |  |  | 149.34.244.174  (149.34.244.176) | 51820 | 54959 |
|  |  |  | 149.34.244.174  (149.34.244.177) | 500 | 59415 |
|  |  |  | 138.199.7.251  (169.150.196.141) | 443 | 62409 |
|  |  |  | 138.199.7.251  (169.150.196.144) | 51820 | 57782 |
|  |  |  | 138.199.7.251  (169.150.196.143) | 51820 | 60141 |
|  |  |  | 138.199.7.251  (169.150.196.142) | 88 | 51036 |
|  |  |  | 138.199.7.159  (138.199.7.163) | 443 | 57800 |
|  |  |  | 138.199.7.159  (138.199.7.160) | 88 | 57948 |
|  |  |  | 138.199.7.159  (138.199.7.161) | 443 | 61661 |
|  |  |  | 190.2.133.223  (190.2.133.229) | 1224 | 59648 |
|  |  |  | 190.2.133.223  (190.2.133.224) | 443 | 57914 |
|  |  |  | 190.2.133.223  (190.2.133.229) | 500 | 57435 |
|  |  |  | 190.2.133.223  (190.2.133.230) | 443 | 55272 |
|  |  |  | 138.199.7.181  (138.199.7.184) | 443 | 54518 |
|  |  |  | 138.199.7.181  (138.199.7.183) | 51820 | 59220 |
|  |  |  | 138.199.7.181  (138.199.7.182) | 443 | 57827 |
|  |  |  | 217.23.3.76  (217.23.3.96) | 88 | 62282 |
|  |  |  | 217.23.3.76  (217.23.3.91) | 1224 | 65031 |
|  |  |  | 185.107.56.98  (185.107.56.104) | 88 | 60630 |
|  |  |  | 185.107.56.98  (185.107.56.98) | 443 | 57474 |
|  |  |  | 185.107.56.98  (185.107.56.105) | 1224 | 51160 |
|  |  |  | 169.150.218.21  (169.150.218.22) | 4500 | 59383 |
|  |  |  | 169.150.218.21  (169.150.218.22) | 51820 | 50752 |
|  |  |  | 169.150.218.21  (169.150.218.23) | 1224 | 59050 |
|  |  |  | 185.107.56.117  (185.107.56.128) | 500 |  |
|  |  |  | 185.107.56.117  (185.107.56.129) | 4500 |  |
|  |  |  | 185.107.56.117  (185.107.56.120) | 88 |  |
|  |  |  | 89.39.107.109  (89.39.107.198) | 1224 |  |
|  |  |  | 169.150.218.36  (169.150.218.40) | 51820 |  |
|  |  |  | 169.150.218.36  (169.150.218.37) | 4500 |  |
|  |  |  | 185.107.56.148  (185.107.56.152) | 51820 |  |
|  |  |  | 185.107.56.148  (185.107.56.150) | 443 |  |
|  |  |  | 169.150.196.100  (138.199.7.233) | 1224 |  |
|  |  |  | 169.150.218.31  (169.150.218.35) | 51820 |  |
|  |  |  | 93.190.140.103  (93.190.140.122) | 51820 |  |
|  |  |  | 185.107.56.134  (185.107.56.136) | 1224 |  |
|  |  |  | 212.8.250.217  (212.8.250.219) | 443 |  |
|  |  |  | 190.2.133.15  (190.2.133.16) | 1224 |  |
|  |  |  | 190.2.133.15  (190.2.133.14) | 1224 |  |
|  |  |  | 190.2.133.200  (190.2.133.202) | 1224 |  |
|  |  |  | 185.183.33.218  (185.183.33.221) | 1224 |  |
|  |  |  | 185.183.34.149  (185.183.34.145) | 1224 |  |
|  |  |  | 212.102.35.225  (212.102.35.229) | 1224 |  |
|  |  |  | 138.199.7.250  (169.150.196.139) | 443 |  |
|  |  |  | 185.107.56.76  (185.107.56.83) | 443 |  |
|  |  |  | 169.150.218.75  (169.150.218.77) | 88 |  |
|  |  |  | 93.190.138.166  (93.190.138.188) | 443 |  |
|  |  |  | 169.150.218.16  (169.150.218.20) | 443 |  |
|  |  |  | 169.150.218.85  (169.150.218.87) | 88 |  |
|  |  |  | 138.199.7.233  (169.150.196.130) | 443 |  |
|  |  |  | 212.8.253.155  (212.8.253.163) | 88 |  |
|  |  |  | 185.107.57.7  (185.107.57.8) | 51820 |  |
|  |  |  | 192.2.132.198  (192.2.132.214) | 51820 |  |
|  |  |  | 169.150.218.1  (169.150.218.4) | 88 |  |
|  |  |  | 89.39.107.157  (89.39.107.157) | 51820 |  |
|  |  |  | 212.8.243.68  (212.8.243.74) | 500 |  |
|  |  |  | 138.199.7.225  (138.199.7.227) | 1224 |  |
|  |  |  | 149.34.244.169  (149.34.244.170) | 88 |  |
|  |  |  | 185.177.126.133  (185.177.126.133) |  |  |
|  |  |  | 89.38.97.196  (89.38.97.206) |  |  |
|  |  |  | 212.8.250.234  (212.38.97.238) |  |  |
|  |  |  | 185.177.124.190  (185.177.124.194) |  |  |
|  |  |  | 185.182.193.32  (185.182.193.75) |  |  |
|  |  |  | 46.166.182.31  (46.166.182.57) |  |  |
|  |  |  | 185.107.56.123  (185.107.56.126) |  |  |
|  |  |  | 89.38.99.138  (89.38.99.93) | 4569 |  |
|  |  |  | 89.38.99.188  (89.38.99.172) |  |  |
|  |  |  | 169.150.218.70  (169.150.218.73) |  |  |
|  |  |  | 149.34.224.159  (149.34.224.162) |  |  |
|  |  |  | 89.39.107.185  (89.39.107.193) |  |  |
|  |  |  | 89.39.106.102  (89.39.106.102) |  |  |
|  |  |  | 185.177.125.177  (185.177.125.174) |  |  |
|  |  |  | 169.150.218.55  (169.150.218.57) |  |  |
|  |  |  | 169.150.196.65  (169.150.196.66) |  |  |
|  |  |  | 185.177.126.71  (185.177.126.127) |  |  |
|  |  |  | 165.150.169.71  (165.150.169.72) |  |  |
|  |  |  | 149.34.244.149  (149.34.244.152) |  |  |
|  |  |  | 169.150.196.145  (169.150.196.147) |  |  |
|  |  |  | 138.199.7.243  (169.150.196.136) |  |  |
|  |  |  | 185.107.56.69  (185.107.56.71) |  |  |
|  |  |  | 89.38.97.139  (89.38.97.174) |  |  |
|  |  |  | 185.107.56.154  (185.107.56.157) |  |  |
|  |  |  | 185.107.56.45  (185.107.56.45) |  |  |
|  |  |  | 185.177.124.219  (185.177.124.225) |  |  |
|  |  |  | 169.150.196.89  (169.150.196.93) |  |  |
|  |  |  | 185.107.56.212  (185.107.56.212) |  |  |
|  |  |  | 169.150.196.77  (169.150.196.78) |  |  |
|  |  |  | 77.247.178.122  (77.247.178.126) |  |  |
|  |  |  | 149.34.244.154  (149.34.244.156) |  |  |
|  |  |  | 169.150.218.80  (169.150.218.84) |  |  |
|  |  |  | 185.177.125.201  (185.177.125.211) |  |  |
|  |  |  | 185.177.124.84  (185.177.124.88) |  |  |
|  |  |  | 149.34.244.179  (149.34.244.181) |  |  |
|  |  |  | 109.236.81.160  (109.236.81.188) |  |  |
|  |  |  | 138.199.7.235  (138.199.7.237) |  |  |
|  |  |  | 149.34.244.129  (149.34.244.132) |  |  |
|  |  |  | 169.150.169.99  (169.150.169.114) |  |  |
|  |  |  | 185.182.193.108  (185.182.193.108) |  |  |
|  |  |  | 169.150.218.65  (169.150.218.67) |  |  |
|  |  |  | 169.150.196.98  (169.150.196.110) |  |  |
|  |  |  | 169.150.218.26  (169.150.218.27) |  |  |
|  |  |  | 169.150.218.91  (169.150.218.135) |  |  |
|  |  |  | 212.102.35.244  (212.102.35.246) |  |  |
|  |  |  | 169.150.218.6  (169.150.218.9) |  |  |
|  |  |  | 185.107.56.162  (185.107.56.165) |  |  |
|  |  |  | 185.177.126.144  (185.177.126.144) |  |  |
|  |  |  | 185.107.56.50  (185.107.56.65) |  |  |
|  |  |  | 185.107.56.143  (185.107.56.147) |  |  |
|  |  |  | 89.39.107.113  (89.39.107.196) |  |  |
|  |  |  | 89.39.104.173  (89.39.104.173) |  |  |
|  |  |  | 212.8.253.138  (212.8.253.139) |  |  |
|  |  |  | 89.39.107.188  (89.39.107.202) |  |  |
|  |  |  | 185.107.80.190  (185.107.80.190) |  |  |
|  |  |  | 185.159.158.139  (37.120.217.162) |  |  |

### Japan

|  |  |  |  |
| --- | --- | --- | --- |
| Src. Port No. | Src. IP | Src. Port No. | Src. IP |
| 1194 443 | 37.19.205.150  (37.19.205.150) |  | 138.199.21.206  (138.199.21.207) |
| 51820  5060 | 138.199.21.216  (212.102.51.246) |  | 138.199.21.193  (138.199.21.194) |
| 51820 | 212.102.51.241  (212.102.51.245) |  | 37.19.205.145  (37.19.205.147) |
|  | 45.14.71.5  (45.14.71.11) |  | 212.102.51.247  (212.102.51.249) |
|  | 138.199.22.103  (138.199.22.107) |  | 138.199.22.102  (138.199.22.196) |
|  | 138.199.21.198  (138.199.21.201) |  | 103.125.235.18  (103.125.235.23) |
|  | 138.199.22.97  (138.199.22.100) |  | 185.159.156.87  (79.110.55.2) |
|  | 37.19.205.155  (37.19.205.155) |  | 45.14.71.7  (45.14.71.23) |

### USA

|  |  |  |  |
| --- | --- | --- | --- |
| Src. Port No. | Src. IP | Src. Port No. | Src. IP |
| 433,88 | 146.70.202.114  (146.70.202.115) | 51820 | 146.70.174.66 (146.70.174.68) |
| 500 (malformed packets) | 195.181.163.1  (195.181.163.29) | 51820 | 37.19.199.139  (37.19.199.141) |
| 443 | 195.181.162.163  (195.181.162.179) | 1224 | 38.132.103.146  (38.132.103.148) |
| 500 (malformed packets) | 89.187.177.71  (89.187.177.73) | 500(malformed packets) | 37.19.200.22  (37.19.200.23) |
| 88 | 37.19.199.129  (37.19.199.133) | 443 | 37.19.200.1  (37.19.200.3) |
| 88 | 37.19.221.194  (37.19.221.232) | 4500 ESP | 37.19.201.195  (37.19.201.248) |
| 443 | 37.19.199.144  (37.19.199.148) | 5060 | 37.19.221.195  (146.70.147.99) |
| 51820 | 37.19.199.149  (37.19.199.153) | 1194 | 89.187.185.161  (89.187.185.171) |
| 1224 | 185.236.200.242  (185.236.200.244) | 51820 | 45.87.214.114  (45.87.214.117) |
| 1224 | 143.244.44.171  (143.244.44.174) | 500  (malformed Packet) | 156.146.51.129  (156.146.51.131) |
| 443 | 89.187.180.55  (89.187.180.57) | ESP 4500 | 146.70.202.82  (146.70.202.85) |
| 80 | 89.187.180.54  (87.249.134.130) | ESP 4500 | 217.138.206.82  (217.138.206.84) |
| 443 | 185.236.126.2  (185.236.126.4) | Malformed packets | 143.244.44.161  (143.244.44.164) |
| 443 | 143.244.44.166  (143.244.44.169) | 88 | 89.187.180.1  (89.187.180.3) |
| 1224 | 37.19.221.199  (37.19.221.237) | ESP | 193.148.18.74  (193.148.18.78) |
| ESP port: 4500 | 37.19.200.17  (37.19.200.18) | 1224 | 89.187.170.159  (89.187.170.165) |
| 443 | 143.244.44.181  (143.244.44.184) | 88 | 146.70.202.2  (146.70.202.6) |
| 88 | 37.19.199.134  (37.19.199.135) | 1224 | 138.199.52.193  (138.199.52.197) |
| 500(malformed packet) | 37.19.221.198  (37.19.221.244) |  | 146.70.45.82  (146.70.45.83) |
| 51820 | 138.199.50.98  (138.199.50.102) |  | 45.89.173.194  (45.89.173.198) |
| 1224 | 193.148.18.58  (198.148.18.59) |  | 37.19.221.196  (37.19.221.233) |
| 443 | 89.187.179.55  (89.187.179.58) |  | 143.244.44.176  (143.244.44.177) |
| 1194 | 37.19.221.197  (37.19.221.227) |  | 37.19.221.193  (37.19.221.201) |
| 443 | 146.70.202.34  (146.70.202.35) |  | 89.45.4.2  (89.45.4.2) |
| 443 | 156.146.54.81  (156.146.54.85) |  | 37.120.244.154  (37.120.244.154) |
|  | 146.70.202.114  (146.70.202.116) |  | 37.19.221.197  (37.19.221.225) |
|  | 156.146.54.81  (156.146.54.84) |  | 156.146.51.129  (156.146.51.132) |
|  | 37.19.221.196  (37.19.221.236) |  | 45.87.214.114  (45.87.214.116) |
|  | 146.70.202.82  (146.70.202.85) |  | 146.70.202.34  (146.70.202.37) |
|  | 146.70.174.66  (146.70.174.66) |  | 37.19.199.144  (37.19.199.146) |
|  | 217.138.206.82  (217.138.206.86) |  | 45.89.173.194  (45.89.173.198) |
|  | 37.19.199.129  (37.19.199.129) |  | 89.187.177.71  (89.187.177.73) |
|  | 37.19.200.1  (37.19.200.4) |  | 185.230.126.2  (185.230.126.6) |
|  | 89.187.185.161  (89.187.185.184) |  | 37.19.199.134  (37.19.199.135) |
|  | 89.187.185.161  (89.187.180.56) |  | 138.199.52.193  (138.199.52.194) |
|  | 193.148.18.74  (193.148.18.75) |  | 89.187.179.55  (89.187.179.58) |
|  | 146.70.202.2  (146.70.202.5) |  | 37.19.221.195  (37.19.221.246) |
|  | 37.19.200.23  (37.19.200.23) |  | 185.236.200.242  (185.236.200.245) |
|  | 146.70.147.98  (146.70.147.100) |  | 146.70.45.82  (146.70.45.83) |
|  | 143.244.44.181  (143.244.44.184) |  | 38.132.103.146  (38.132.103.150) |
|  | 143.244.44.166  (143.244.44.168) |  | 195.181.162.163  (195.181.162.186) |
|  | 37.19.221.199  (37.19.221.237) |  | 37.19.221.198  (37.19.221.242) |
|  | 143.244.44.161  (143.244.44.164) |  | 37.19.200.17  (37.19.200.18) |
|  | 89.187.170.159  (89.187.170.167) |  | 195.181.163.1  (195.181.163.32) |
|  | 37.19.199.149  (37.19.199.153) |  | 37.19.221.193  (37.19.221.202) |
|  | 143.244.44.176  (143.244.44.178) |  | 89.187.180.1  (89.187.180.2) |

## Open-VPN UDP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 107 – 177 – 182 – 409 – 619 – 1282 – 1357 – 1395 – 1414 – 1423 – 1428 – 1433 - | 107 – 119 – 127 -135 – 143 – 1121 - 1433 | 4569 | 51122 | 146.70.202.114 |
| 107 - 177 – 181– 1282 – 1357 – 1395 – 1414 – 1423 – 1428 – 1433 | 107 – 119 – 127 -146– 181- 205 – 265 – 624 - 1433 | 4569 | 57241 | 185.107.56.45 |
| 107 – 119 - 177 – 181– 227 - 1282 – 1357 – 1345 -1357 – 1395 -1414 -1423 – 1428 - 1433 | 107 – 119 – 127 – 138 - 146– 171– 624 - 1433 | 5060 | 59894 | 89.187.180.1 |
| 107 - 177 – 181– 1282 – 1357 – 1395 – 1414 – 1423 – 1428 – 1433 | 107 – 119 – 127 – 135 – 138 – 143 – 146 – 181 – 1121 – 1433 | 80 | 62340 | 37.19.199.149 |
|  |  |  |  |  |
|  |  |  |  |  |

## Open – VPN TCP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 60 – 66- 89 – 124 – 161 – 184 – 208 – 1295 – 1296 – 1370 – 1405 – 1440 – 1445 – 1459 - | 54 – 74 -82 – 90 – 121 – 133 - 1514 | 7770 | 60810 | 103.125.235.18 |
| 60 – 121 – 133 – 161 – 1295 – 1296 – 1370 – 1407 – 1426-1435 – 1440- 1445 – 1459 - 1486 – 1500 – 1507 | 54 – 121 – 133 – 152 = 160 – 195 | 443 | 65112 | 149.34.244.129 |
| 60 – 121 – 133 –188– 1295 – 1370-1373 – 1407 – 1426– 1440- 1445 – 1486 – 1500 – 1507 - | 54 – 66 - 121 – 133 – 152 = 160 – 195 – 1514 | 443 | 60949 | 37.10.200.4 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## After Subnetting

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 103.125.235.**15-45** | 146.70.202**.0-125** | 185.107.80.**180-220** | 185.236.200**.225-255** | 212.38.97.**200-255** | 37.19.221.**170-255** | 89.187.177.**50-100** | 93.190.138.**150-200** | 93.190.138.**150-200** |
| 109.236.81.**128-196** | 146.70.45.**50-100** | 185.159.156.**70-100** | 190.2.130**.150-200** | 212.8.243.**50-122** | 38.132.103.**130-200** | 89.187.179**.50-100** | 93.190.140.**96-155** | 93.190.140.**96-155** |
| 138.199.21.**172-255** | 149.34.244.**122-196** | 185.159.158.**130-160** | 190.2.133.**1-255** | 212.8.253.**122-200** | 45.14.71.**1-96** | 89.187.180.**1-96** | 93.190.138.**150-200** |  |
| 138.199.22.**96-255** | 156.146.51.**122-172** | 185.177.124.**70-255** | 193.148.18**.50-122** | 217.138.206.**50-122** | 45.87.214.**100-155** | 89.187.185.**150-225** | 93.190.140.**96-155** |  |
| 138.199.50.**96-125** | 156.146.54.**50-122** | 185.177.125.**165-225** | 192.2.132.**170-255** | 217.23.3**.50-122** | 45.89.173.**170-255** | 89.38.97.**120-255** | 93.190.138.**150-200** |  |
| 138.199.52.**175-197** | 165.150.169.**50-145** | 185.177.126.**50-196** | 195.181.162.**122-200** | 37.120.217.**122-200** | 46.166.182.**1-100** | 89.38.99.**80-200** | 93.190.140.**96-155** |  |
| 138.199.7.**145-255** | 169.150.196.**50-196** | 185.182.193.**32-122** | 195.181.163.**1-50** | 37.120.244.**120-200** | 77.247.178.**100-200** | 89.39.104.**160-200** | 93.190.138.**150-200** |  |
| 143.244.44.**150-200** | 169.150.218.**1-196** | 185.183.33.**200-255** | 198.148.18.**40-100** | 37.19.200.**1-96** | 79.110.55.**0-100** | 89.39.106.96-155 | 93.190.140.**96-155** |  |
| 146.70.147.**50-122** | 185.107.56.**20-255** | 185.183.34**.122-200** | 212.102.35.**200-255** | 37.19.201.**150-255** | 87.249.134.**100-150** | 89.39.107.**100-225** | 93.190.138.**150-200** |  |
| 146.70.174.**50-96** | 185.107.57.**1-20** | 185.230.126.**2-50** | 212.102.51.**200-255** | 37.19.205.**120-200** | 89.187.170.**150-200** | 89.45.4.**0-50** | 93.190.140.**96-155** |  |

# Windscribe

## WireGuard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 1494 – 1352 – 114 – 124 == 137 | 122 – 138 – 154 – 1354 | 155.94.217.4 | 59531 | 443 |
| 114 – 123 == 137 – 1352 – 1494 | 122 – 138 == 145 – 154 – 1354 | 107.7.60.188 | 56990 | 443 |
| 114 – 123 == 134 - 145 – 1352 -1382 - 1494 | 122 – 138 – 154 – 218 – 1354 | **155.94.216.68**  **155.94.216.122** | 57272 | 443 |
| 114 – 123 == 137 – 145 – 1352 - 1494 | 122 – 138 - 154 – 186 – 218 - 1354 | **161.129.70.132**  **161.129.70.135** | 51097 | 443 |
| 114 – 123 == 137 – 145 – 188 == 202 -1352 – 1382 - 1494 | 122 – 138 – 154 – 186 - 202 – 218 - 1354 | 104.129.18.196  104.129.18.214 | 49716 | 443 |
| 114 – 123 == 137 – 145 – 188 == 202 -1352 – 1382 - 1494 | 122 – 138 – 154 – 186 – 218 – 1354 - 1494 | 162.222.198.4  162.222.198.23 | 49834 | 443 |
| 114 – 123 == 137 – 145 – 188 == 202 -1352 – 1382 - 1494 | 122 – 138 – 154 – 186 – 218 – 1354 - 1494 | 69.174.103.196  69.174.103.248 | 54517 | 443 |
| 114 – 123 == 137 – 165 == 166 – 206 == 224 -1352 - 1494 | 122 – 138 – 154 – 186 – 282 - 1494 | 107.150.22.196  107.150.22.246 | 61209 | 443 |
|  |  | 107.150.30.132  107.150.30.166 | 56498 | 443 |
|  |  | 155.97.217.xxx |  |  |
|  |  | 107.150.23.196  107.150.23.233 | 57368 | 443 |
|  |  | 104.233.93.196  104.233.93.236 | 50723 | 443 |
|  |  | 162.222.198.68  162.222.198.114 | 64071 | 443 |
|  |  | 155.94.250.68  155.94.250.101 | 59004 | 443 |
|  |  | 104.233.103.68  104.233.103.117 | 65070 | 443 |
|  |  | 198.96.95.132  198.96.95.189 | 55985 | 443 |
|  |  | 107.161.86.132  107.161.86.145 | 63632 | 443 |
|  |  | 155.94.250.4  155.94.250.10 | 50299 | 443 |
|  |  | 104.223.98.132  104.223.98.138 | 58521 | 443 |
|  |  | 104.223.102.4  104.223.102.52 | 49485 | 443 |
|  |  | 104.223.100.132  104.223.100.142 | 54555 | 443 |
|  |  | 155.94.251.68  155.94.251.102 | 58554 | 443 |
|  |  | 155.94.247.196  155.94.247.243 | 62563 | 443 |
|  |  | 204.44.122.4  204.44.122.19 | 57659 | 443 |
|  |  | 68.235.35.181  68.235.33.98 | 57448 | 443 |
|  |  | 68.235.43.187  68.235.32.229 | 59552 | 443 |
|  |  | 208.77.22.205  68.235.38.38 | 52209 | 443 |
|  |  | 68.235.35.173  68.235.33.131 | 63652 | 443 |
|  |  | 68.235.43.197  68.235.32.227 | 58268 | 443 |
|  |  | 68.235.39.125  68.235.38.187 | 52788 | 443 |
|  | MIAMI  Snow | 173.44.36.132  173.44.36.178 | 62673 | 443 |
|  |  | 155.94.218.68  155.94.218.113 | 65284 | 443 |
|  |  | 96.47.239.196  96.47.239.236 | 62459 | 443 |
|  | MIAMI  Vice | 86.106.87.100  86.106.87.103 | 62328 | 443 |
|  |  | 45.87.214.68  45.87.214.83 | 56384 | 443 |
|  |  | 37.120.215.164  37.120.215.168 | 58456 | 443 |
|  | NEW YORK  Empire | 217.138.255.196  217.138.255.202 | 62346 | 443 |
|  |  | 77.81.136.68  77.81.136.85 | 49922 | 443 |
|  |  | 92.119.177.84  92.119.177.90 | 53648 | 443 |
|  |  | 212.103.48.84  212.103.48.92 | 63361 | 443 |
|  |  |  |  |  |
|  | NEW YORK  Grand Central | 143.244.44.211  154.47.26.242 | 59669 | 443 |
|  | Washington DC  Precedent | 23.105.190.162  23.105.190.167 | 58573 | 443 |
|  |  | 207.244.91.155  207.244.91.174 | 65260 | 443 |
|  |  | 23.105.186.146  23.105.186.145 | 49606 | 443 |
|  | Los Angeles  Dogg | 89.41.26.52  89.41.26.62 | 52988 | 443 |
|  |  | 91.219.212.84  91.219.212.91 | 60854 | 443 |
|  |  | 185.236.200.20  185.236.200.28 | 61104 | 443 |
|  | Dallas | 198.55.126.224  198.55.126.196 | 63605 | 443 |
|  | Seattle  Cobain | 104.129.57.132  104.129.57.158 | 54666 | 443 |
|  |  | 104.129.56.164  104.129.56.167 | 55951 | 443 |
|  | Montreal  Expo 67 | 198.8.85.241  198.8.85.247 | 65240 | 443 |
|  |  | 172.98.68.164  172.98.68.164 | 62556 | 443 |
|  | Toronto  Comfort Zone | 149.57.28.194  149.57.28.211 | 59653 | 443 |
|  | Toronto  The 6 | 104.245.146.76  104.245.146.54 | 63034 | 443 |
|  | Vancouver  Granville | 71.19.251.141  71.19.251.147 | 58234 | 443 |
|  |  | 71.19.252.153  71.19.252.158 | 52089 | `443 |
|  | Vancouver  Vansterdam | 208.78.41.148  208.78.41.155 | 52155 | 443 |
|  | Hong Kong  Victoria | 27.122.12.228  27.122.12.235 | 58080 | 443 |
|  |  | 103.10.197.4  27.122.14.68 | 52617 | 443 |
|  |  | 27.122.14.36  27.122.14.44 | 65354 | 443 |
|  |  | 223.123.88.96 |  | 443 |
|  | Paris  Jardin | 84.17.43.227  84.17.43.239 | 63128 | 443 |
|  |  | 139.199.47.195  139.199.47.209 | 56843 | 443 |
|  |  | 138.199.47.222  138.199.47.224 | 63008 | 443 |
|  | Paris  Seine | 146.70.18.100  146.70.18.125 | 64554 | 443 |
|  |  | 146.70.68.228  146.70.68.236 | 58113 | 443 |
|  |  | 146.70.105.4  146.70.105.16 | 63006 | 443 |
|  |  | 194.59.249.244  194.59.249.203 | 59295 | 443 |
|  |  | 185.156.173.180  185.189.113.62 | 49880 | 443 |
|  | Frankfurt  Castle | 146.70.107.68  146.70.107.82 | 62173 | 443 |
|  |  | 193.27.14.180  193.27.14.182 | 53544 | 443 |
|  |  | 45.87.212.68  45.87.212.71 | 63598 | 443 |
|  | Frankfurt  Wurstchen | 149.36.50.213  149.36.50.230 | 63031 | 443 |
|  |  | 149.36.50.159  149.36.50.173 | 50976 | 443 |
|  | Amsterdam  Canal | 146.70.108.68  146.70.108.60 | 60660 | 443 |
|  |  | 146.70.108.164  146.70.108.171 | 62187 | 443 |
|  |  | 2.58.44.244  2.58.44.252 | 64291 | 443 |
|  | Amsterdam  Red Light | 104.223.81.196  104.223.81.196 | 58460 | 433 |
|  |  | 155.94.209.132  155.94.209.188 | 56629 | 443 |
|  | Amsterdam  Tulip | 169.150.196.195  169.150.196.199 | 65303 | 443 |
|  |  | 149.36.51.131  149.36.51.139 | 52989 | 443 |
|  | Oslo  Fjord | 185.253.97.132  185.253.97.141 | 52188 | 443 |
|  |  | 146.70.103.4  146.70.103.9 | 51240 | 443 |
|  |  | 146.70.103.36  146.70.103.45 | 59001 | 443 |
|  |  | 37.120.203.228  37.120.203.252 | 51643 | 443 |
|  | Bucharest  No Vampires | 185.120.147.4  185.120.147.5 | 55006 | 443 |
|  |  | 185.217.68.132  185.217.68.136 | 62049 | 443 |
|  |  | 91.207.103.196  91.207.103.205 | 54647 | 443 |
|  |  | 146.70.97.228  146.70.97.245 | 50731 | 443 |
|  | Zurich  Alphorn | 146.70.99.228  146.70.99.246 | 57175 | 443 |
|  |  | 146.70.99.164  146.70.99.187 | 60550 | 443 |
|  | Zurich  Lindenhof | 169.150.197.163  169.150.197.185 | 50499 | 443 |
|  |  | 169.150.197.195  169.150.197.214 | 58502 | 443 |
|  | London  Crumpets | 89.47.62.100  89.47.62.110 | 56946 | 443 |
|  |  | 217.138.254.68  217.138.254.70 | 57410 | 443 |
|  |  | 146.70.104.4  146.70.104.9 | 55558 | 443 |
|  |  | 146.70.95.148  146.70.95.148 | 64528 | 443 |
|  |  | 146.70.95.132  146.70.95.138 | 63084 | 443 |
|  | London  Custard | 138.199.31.131  138.199.31.141 | 64458 | 443 |
|  |  | 212.102.63.3  212.102.63.30 | 54069 | 443 |
|  |  | 84.17.50.195  84.17.50.208 | 62492 | 443 |
|  | Istanbul  Lygos | 149.102.229.227  149.102.229.247 | 49345 | 443 |
|  |  | 149.50.208.99  149.50.208.100 | 50534 | 443 |
|  |  |  |  |  |

## IKEv2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 118 – 130 – 146 – 1354 – 1478 | 118 – 130 – 138 – 142 – 146 | 107.150.30.66  107.150.30.109 | 4500 | 4500 |
| 118 – 126 – 130 – 1354 – 1478 | 118 – 138 – 146 | 89.41.26.50  89.41.26.59 | 4500 | 4500 |
| 118 – 130 – 134 – 1354 – 1478 | 118 – 130 – 138 – 1354 | 172.98.68.162  172.98.68.171 | 4500 | 4500 |
| 1. – 130 – 158 – 1354 – 1478 | 118 – 138 – 158 – 1354 | 71.19.252.151  71.19.252.161 | 4500 | 4500 |
|  |  |  |  |  |
|  |  |  |  |  |

## Stealth

TCP Whole

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 56 – 142 – 154 – 1514 – 4250 | 54 – 142 – 154 – 1514 | 89.41.26.52 | 58004 | 443 |
| 56 – 142 – 154 – 1224 – 1514 – 4250 – 1380 – 4284 | 54 – 142 – 154 – 1380 – 1514 | 149.57.28.41 | 59804 | 443 |
| 56 – 142 – 154 – 1224 – 1514 – 4250 – 1380 – 4284 | 54 – 142 – 154 – 1380 – 1514 | 198.55.126.196  198.55.126.245 | 49701 | 443 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## TCP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 60 – 1514 | 54 – 120 – 140 = 180 – 1527 – 2809 | 155.94.250.3 | 52896 | 443 |
| 60 – 1514 | 54 – 120 – 140 = 180 – 1527 – 2754 + | 198.96.95.182 | 57442 | 443 |
| 60 – 1514 | 54 – 120 – 140 = 180 – 1527 – 2754 + | 27.122.12.122 | 54940 | 443 |
| 60 – 1514 | 54 – 120 – 140 = 180 – 1527 – 2809 | 104.129.56.164  104.129.56.167 | 55951 | 443 |

## WStunnel

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 56 – 60 – 84 – 144 – 158 – 1238 – 1376 – 1384 – 1514 | 54 – 66 – 148 – 90 – 1514 – 1573+ | 27.122.12.111 | 63847 | 443 |
| 56 – 60 – 84 – 144 – 158 – 1238 – 1376 – 1384 – 1514 | 167==177 – 54 – 66 – 148 – 90 – 1514 – 1573+ | 149.57.28.7 | 63957 | 443 |
| 56 – 60 – 84 – 144 – 158 – 1238 – 1376 – 1384 – 1514 | 167==177 – 54 – 66 – 148 – 90 – 1514 – 1573+ | 104.129.56.162 | 54135 | 443 |
| 56 – 60 – 84 – 144 – 158 – 1238 – 1376 – 1384 – 1514 | 54 – 66 – 148 – 167==177 – 90 – 1514 – 1573+ | 71.19.252.153 | 52089 | 443 |

## UDP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 106 – 120 == 124 – 1294 – 1344 – 1392 | 106 – 126 == 131 | 104.129.56.163 | 55509 | 443 |
| 106 – 118 – 120 – 1294 – 1326 – 1344 – 1392 | 106 – 118 – 125 == 131 – 142 – 1344 – 1392 | 155.94.218.67 | 50226 | 443 |
| 106 – 117 – 118 – 119 == 122 – 1294 – 1344 – 1392 | 106 – 118 – 1344 – 1392 | 198.8.85.225 | 55348 | 443 |
| 106 – 118 – 120 – 1294 – 1326 – 1344 – 1392 | 106 – 118 – 125 == 131 – 142 – 1344 – 1392 | 84.17.43.226 | 49891 | 443 |

## IP

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 103.10.197.xxx | 143.244.44.xxx | 162.222.198.xxx | 193.27.14.xxx | 212.102.xxx.xxx | 68.174.103.xxx |
| 104.129.xxx.xxx | 146.70.xxx.xxx | 169.150.19x.xxx | 194.59.249.xxx | 212.103.xxx.xxx | 71.19.25x.xxx |
| 104.223.xxx.xxx | 149.102.229.xxx | 172.98.68.xxx | 198.55.126.xxx | 217.138.25x.xxx | 77.81.136.xxx |
| 104.233.xxx.xxx | 149.36.xx.xxx | 173.44.36.xxx | 198.8.85.xxx | 223.123.88.xxx | 84.17.43.xxx |
| 104.245.146.xxx | 149.50.208.xxx | 185.120.147.xxx | 198.96.95.xxx | 23.105.1xx.xxx | 84.17.50.xxx |
| 107.150.xx.xxx | 149.57.xx.xxx | 185.156.173.xxx | 2.58.44.xxx | 27.122.1x.xxx | 86.106.87.xxx |
| 107.161.86.xxx | 154.47.26.xxx | 185.189.113.xxx | 204.44.122.xxx | 37.120.2xx.xxx | 89.41.26.xxx |
| 107.7.60.xxx | 155.94.xxx.xxx | 185.217.68.xxx | 207.244.91.xxx | 45.87.21x.xxx | 89.47.62.xxx |
| 138.199.xx.xxx | 155.97.217.xxx | 185.236.200.xxx | 208.77.22.xxx | 68.235.3x.xxx | 91.2xx.xxx.xxx |
| 139.199.47.xxx | 161.129.70.xxx | 185.253.97.xxx | 208.78.41.xxx | 68.235.4x.xxx | 92.119.117.xxx |
|  |  |  |  |  | 96.47.239.xxx |

# Tunnel-Bear

## WireGuard

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 114 – 123==127 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 159.223.123.80 | 51820 | 51820 |
| 114 – 123==131 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 159.89.229.4 | 51820 | 51820 |
| 114 – 123==137 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 146.190.221.237 | 51820 | 51820 |
| 114 – 123==137 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 67.205.185.125 | 51820 | 51820 |
| 124==137 – 1352 | 138 – 154 – 186 – 1354 | 146.190.78.14 | 51820 | 51820 |
| 114 – 123==137 – 1348 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 174.138.95.205 | 51820 | 51820 |
| 114 – 123==137 – 1348 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 165.227.190.147 | 51820 | 51820 |
| 114 – 123==137 – 1348 – 1352 – 1494 | 122 – 138 – 154 – 186 – 1354 | 165.227.65.21 | 51820 | 51820 |
|  |  | 192.241.150.52 | 51820 | 51820 |
|  |  | 159.203.110.178 | 51820 | 51820 |
|  |  | 146.190.221.234 | 51820 | 51820 |
|  |  | 134.209.119.87 | 51820 | 51820 |
|  |  | 157.245.124.236 | 51820 | 51820 |
|  |  | 165.227.223.156 | 51820 | 51820 |
|  |  | 159.65.40.36 | 51820 | 51820 |
|  |  | 45.55.192.185 | 51820 | 51820 |
|  |  | 65.225.56.109 | 51820 | 51820 |
|  |  | 134.209.115.236 | 51820 | 51820 |
|  |  | 104.131.70.103 | 51820 | 51820 |
|  |  | 45.55.67.132 | 51820 | 51820 |
|  |  | 107.170.62.18 | 51820 | 51820 |
|  |  | 143.198.26.17 | 51820 | 51820 |
|  |  | 138.197.76.54 | 51820 | 51820 |
|  |  | 165.227.124.162 | 51820 | 51820 |
|  |  | 162.243.55.20 | 51820 | 51820 |
|  |  | 162.243.48.13 | 51820 | 51820 |
|  |  | 104.131.68.172 | 51820 | 51820 |
|  |  | 159.203.85.23 | 51820 | 51820 |
|  |  | 137.184.23.75 | 51820 | 51820 |
|  |  | 167.172.232.90 | 51820 | 51820 |
|  |  | 45.55.195.206 | 51820 | 51820 |
|  |  | 165.227.93.214 | 51820 | 51820 |
|  |  | 68.183.58.206 | 51820 | 51820 |
|  |  | 159.223.113.42 | 51820 | 51820 |
|  |  | 104.131.69.74 | 51820 | 51820 |
|  |  | 192.241.251.33 | 51820 | 51820 |
|  |  | 162.243.96.11 | 51820 | 51820 |
|  |  | 167.71.188.198 | 51820 | 51820 |
|  |  | 157.230.11.141 | 51820 | 51820 |
|  |  | 167.172.226.245 | 51820 | 51820 |
|  |  | 165.227.82.126 | 51820 | 51820 |
|  |  | 159.203.132.89 | 51820 | 51820 |
|  |  | 162.243.199.14 | 51820 | 51820 |
|  |  | 159.203.136.230 | 51820 | 51820 |
|  |  | 206.189.200.246 | 51820 | 51820 |
|  |  | 192.81.211.144 | 51820 | 51820 |
|  |  | 159.65.186.240 | 51820 | 51820 |
|  |  | 138.197.110.128 | 51820 | 51820 |
|  |  | 165.227.87.40 | 51820 | 51820 |
|  | UK | 188.166.147.145 | 51820 | 51820 |
|  |  | 139.59.163.167 | 51820 | 51820 |
|  |  | 104.248.162.7 | 51820 | 51820 |
|  |  | 104.248.167.56 | 51820 | 51820 |
|  |  | 46.101.91.228 | 51820 | 51820 |
|  |  | 206.189.18.182 | 51820 | 51820 |
|  |  | 209.97.190.70 | 51820 | 51820 |
|  |  | 159.65.49.170 | 51820 | 51820 |
|  |  | 161.35.162.126 | 51820 | 51820 |
|  |  | 165.232.33.198 | 51820 | 51820 |
|  |  | 134.122.106.102 | 51820 | 51820 |
|  |  | 161.35.163.141 | 51820 | 51820 |
|  |  | 159.65.81.12 | 51820 | 51820 |
|  |  | 143.110.166.130 | 51820 | 51820 |
|  |  | 143.110.162.42 | 51820 | 51820 |
|  |  | 134.122.101.51 | 51820 | 51820 |
|  |  | 165.232.41.8 | 51820 | 51820 |
|  | Argentina | 103.50.33.223 | 51820 | 51820 |
|  |  | 200.25.50.23 | 51820 | 51820 |
|  | Australia | 139.180.178.70 | 51820 | 51820 |
|  |  | 149.28.164.197 | 51820 | 51820 |
|  |  | 37.120.234.211 | 51820 | 51820 |
|  |  |  |  |  |

## IKEv2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Packet Length | Request Packet Length | Src. IP | Dest Port | Src. Port No. |
| 126 – 142 – 158 – 174 – 190 – 1358 – 1486 | 126 – 142 – 158 – 174 – 190 – 1358 – 1486 | 178.175.135.35 | 4500 | 4500 |
| 126 - 142 - 158 - 174 - 1358 - 1374 – 1486 | 126 - 142 - 158 - 174 - 1358 | 37.120.145.42 | 4500 | 4500 |
| 126 - 142 - 158 - 174 - 1358 - 1374 - 1486 | 126 - 142 - 158 - 174 - 1358 | 134.122.101.51 | 4500 | 4500 |
|  |  |  |  |  |

## IP Addr

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 103.50.33.xxx | 134.209.xx.xxx | 143.110.1xx.xxx | 159.2xx.xxx.xxx | 165.2xx.xxx.xxx | 192.241.xxx.xxx | 45.55.xxx.xxx |
| 104.131.xx.xxx | 137.184.xx.xxx | 143.198.26.xxx | 159.65.xxx.xxx | 167.172.xxx.xxx | 200.25.50.xxx | 46.101.xxx.xxx |
| 104.248.162.xxx | 138.197.xxx.xxx | 146.190.xxx.xxx | 159.89.xxx.xxx | 167.71.xxx.xxx | 106.189.xx.xxx | 65.225.56.xxx |
| 107.170.xx.xxx | 139.180.xxx.xxx | 149.28.164.xxx | 161.35.16x.xxx | 174.138.xxx.xxx | 209.97.xxx.xxx | 67.205.185.xxx |
| 134.122.xx.xxx | 139.59.xxx.xxx | 157.2xx.xxx.xxx | 162.243.xxx.xxx | 188.166.xxx.xxx | 37.120.234.xxx | 68.183.58.xxx |

# Identifying VPN

## Proton VPN

1. Ports = 51820- 1224 – 88 – 433 – 4500 – 500 – 80 – 443 – 7770 – 4569 – 5060.
2. Packets are in length as a request is 122 – 138 – 154 – 186 – 107 – 119 – 127 – 135 – 138 – 143 – 146 – 181 – 1121 – 1433 – 54 – 66 - 121 – 133 – 152 = 160 – 195 – 1514 and response 122 – 138 – 154 – 130 – 1354 – 1402 – 1434 – 1482 – 107 - 177 – 181– 1282 – 1357 – 1395 – 1414 – 1423 – 1428 – 1433 – 60 – 66- 89 – 124 – 161 – 184 – 208 – 1295 – 1296 – 1370 – 1405 – 1440 – 1445 – 1459.
3. Ips are mentioned above.

## Windscribe

1. Port = 443 - 4500 and request are as 4500
2. Packet size of requests are as 122 - 1354 - 154 -138 -218 - 1494 - 118 - 130 - 1354 - 1514 - 1380 - 54 - 120 - 2809 + - 1527 - 66 - 148 - 90 - 1573 + - 106 and responses are as 1494 - 1352 – 1450 – 114 – 124 == 137 – 1382 - 158 - 1354 - 1478 - 1514 - 4250 - 1380 - 4284 - 60 - 1384 - 1376 - 1238 - 1392 - 1344 - 1294 - 106
3. Ips are mentioned above.

## Tunnel - Bear

1. Port = 51820, 4500 and requests are as 51820. 4500
2. The packet size of requests is as 122 - 138 - 154 - 186 -1354 - 126 - 142 - 158 - 174 - 1358 and responses are as 114 - 123 - 1348 - 1352 – 1494 - 126 - 142 - 158 - 174 - 1358 - 1374 – 1486.
3. There are many more IPs, but we can use just ports to identify the VPN.

# Remaining

1. Hide.me
2. Turbo VPN
3. Hotspot Shield
4. Nord VPN
5. Super VPN
6. Cloudflare WARP