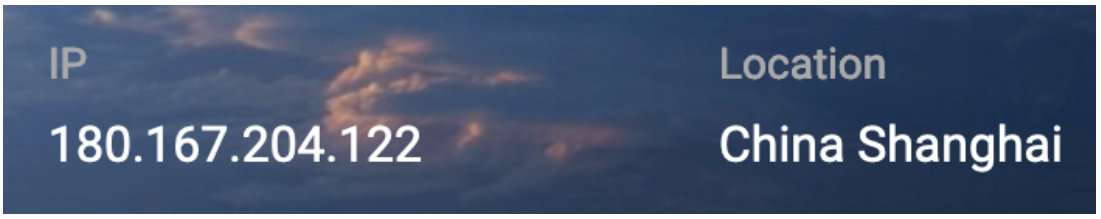
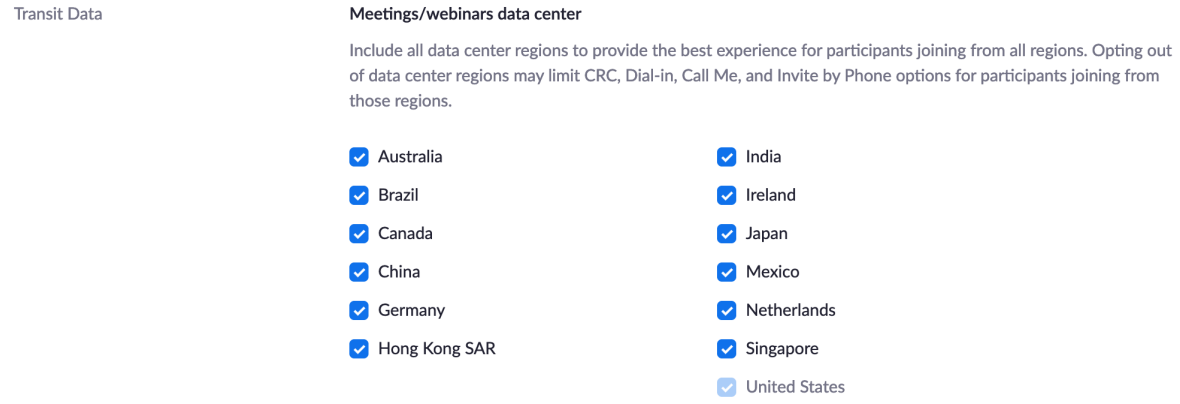
Test environment
1. One Windows VPS provisioned in the Vultr (https://www.vultr.com/) London data center, with Zoom and Wireshark manually installed.
IP: 78.141.228.20

2. My personal computer in Shanghai
IP: 180.167.204.122



3. Zoom datacenter setting in my UVic Zoom account
Free account (my personal account) cannot change this setting



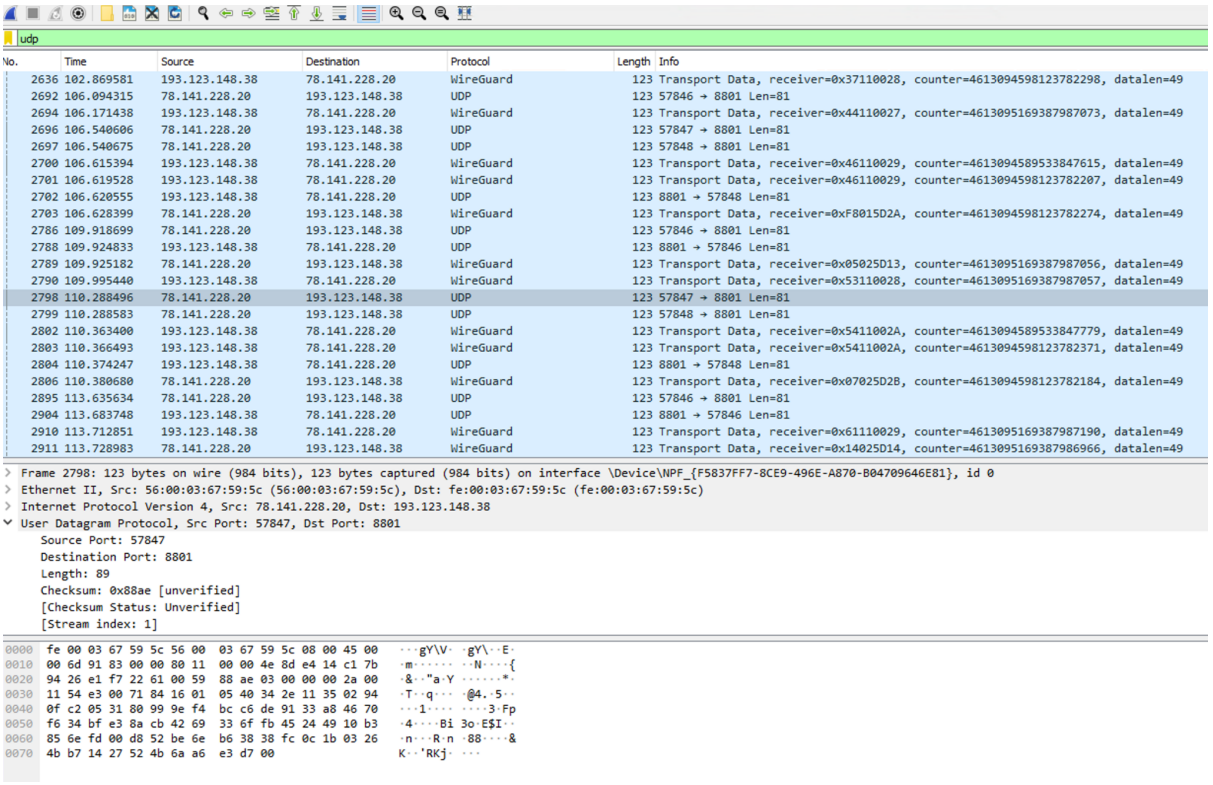
Test 1

1. On London, start a Zoom meeting using UVic Netlink ID

It connects to a server: 193.123.148.38:8801, udp

(8801 is the port of Zoom media routing service)

https://panlab.cs.uvic.ca/web3/viewtopic.php?f=102&t=8788&p=108185&hilit=8801#p108185



udp

No.	Time	Source	Destination	Protocol	Length	Info
2636	102.869581	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x37110028, counter=4613094598123782298, datalen=49
2692	106.094315	78.141.228.20	193.123.148.38	UDP	123	57846 → 8801 Len=81
2694	106.171438	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x44110027, counter=4613095169387987073, datalen=49
2696	106.540606	78.141.228.20	193.123.148.38	UDP	123	57847 → 8801 Len=81
2697	106.540675	78.141.228.20	193.123.148.38	UDP	123	57848 → 8801 Len=81
2700	106.615394	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x46110029, counter=4613094589533847615, datalen=49
2701	106.619528	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x46110029, counter=4613094598123782207, datalen=49
2702	106.620555	193.123.148.38	78.141.228.20	UDP	123	8801 → 57848 Len=81
2703	106.628399	78.141.228.20	193.123.148.38	WireGuard	123	Transport Data, receiver=0xF8015D2A, counter=4613094598123782274, datalen=49
2786	109.918699	78.141.228.20	193.123.148.38	UDP	123	57846 → 8801 Len=81
2788	109.924833	193.123.148.38	78.141.228.20	UDP	123	8801 → 57846 Len=81
2789	109.925182	78.141.228.20	193.123.148.38	WireGuard	123	Transport Data, receiver=0x05025D13, counter=4613095169387987056, datalen=49
2790	109.995440	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x53110028, counter=4613095169387987057, datalen=49
2798	110.288496	78.141.228.20	193.123.148.38	UDP	123	57847 → 8801 Len=81
2799	110.288583	78.141.228.20	193.123.148.38	UDP	123	57848 → 8801 Len=81
2802	110.363400	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x5411002A, counter=4613094589533847779, datalen=49
2803	110.366493	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x5411002A, counter=4613094598123782371, datalen=49
2804	110.374247	193.123.148.38	78.141.228.20	UDP	123	8801 → 57848 Len=81
2806	110.380680	78.141.228.20	193.123.148.38	WireGuard	123	Transport Data, receiver=0x07025D2B, counter=4613094598123782184, datalen=49
2895	113.635634	78.141.228.20	193.123.148.38	UDP	123	57846 → 8801 Len=81
2904	113.683748	193.123.148.38	78.141.228.20	UDP	123	8801 → 57846 Len=81
2910	113.712851	193.123.148.38	78.141.228.20	WireGuard	123	Transport Data, receiver=0x61110029, counter=4613095169387987190, datalen=49
2911	113.728983	78.141.228.20	193.123.148.38	WireGuard	123	Transport Data, receiver=0x14025D14, counter=4613095169387986966, datalen=49

```
> Frame 2798: 123 bytes on wire (984 bits), 123 bytes captured (984 bits) on interface \Device\NPF_{F5837FF7-8CE9-496E-A870-B04709646E81}, id 0
> Ethernet II, Src: 56:00:03:67:59:5c (56:00:03:67:59:5c), Dst: fe:00:03:67:59:5c (fe:00:03:67:59:5c)
> Internet Protocol Version 4, Src: 78.141.228.20, Dst: 193.123.148.38
v User Datagram Protocol, Src Port: 57847, Dst Port: 8801
    Source Port: 57847
    Destination Port: 8801
    Length: 89
    Checksum: 0x88ae [unverified]
    [Checksum Status: Unverified]
    [Stream index: 1]
```

```
0000  fe 00 03 67 59 5c 56 00  03 67 59 5c 08 00 45 00   ···gY\V· ·gY\··E·
0010  00 6d 91 83 00 00 80 11  00 00 4e 8d e4 14 c1 7b   ·m····· ··N····{
0020  94 26 e1 f7 22 61 00 59  88 ae 03 00 00 00 2a 00   ·&··"a·Y ·····*·
0030  11 54 e3 00 71 84 16 01  05 40 34 2e 11 35 02 94   ·T··q··· ·@4.·5··
0040  0f c2 05 31 80 99 9e f4  bc c6 de 91 33 a8 46 70   ···1···· ····3·Fp
0050  f6 34 bf e3 8a cb 42 69  33 6f fb 45 24 49 10 b3   ·4····Bi 3o·E$I··
0060  85 6e fd 00 d8 52 be 6e  b6 38 38 fc 0c 1b 03 26   ·n···R·n ·88····&
0070  4b b7 14 27 52 4b 6a a6  e3 d7 00                  K··'RKj· ···
```

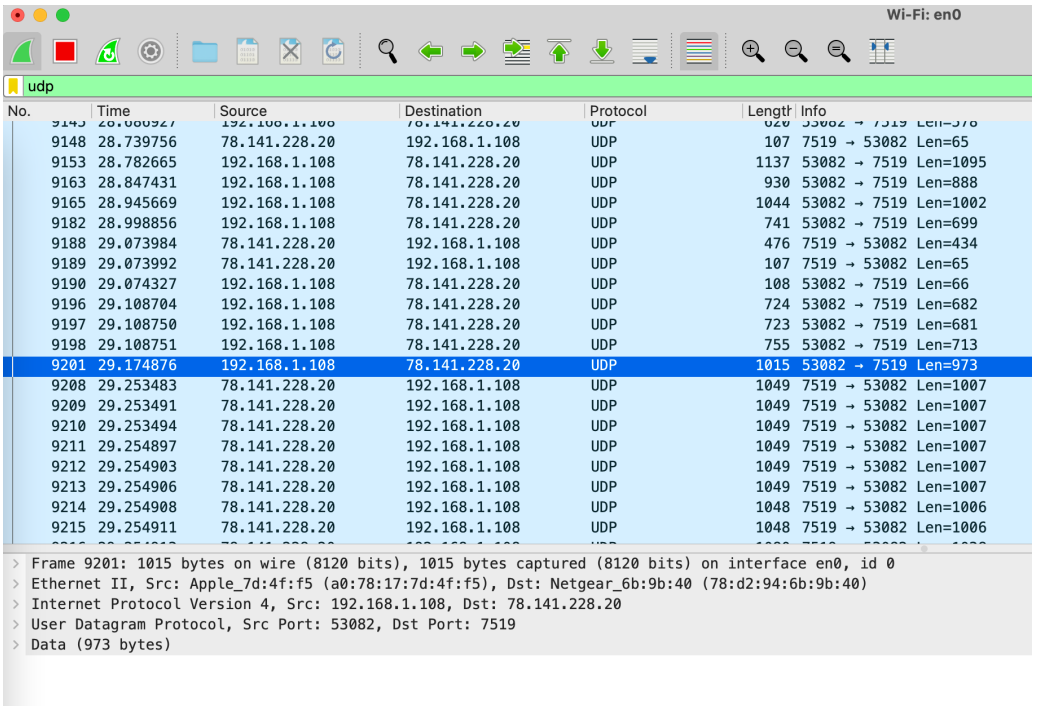
And 193.123.148.38 is one IP from Oracle Cloud which is one provider for Zoom

https://tools.keycdn.com/geo?host=193.123.148.38

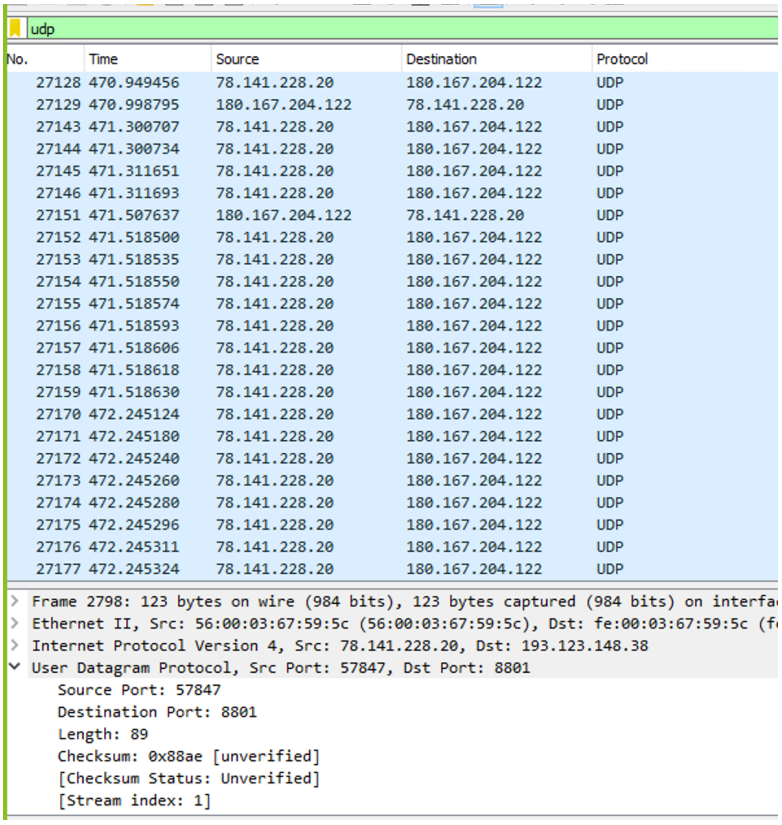
LOCATION	
City	Ashburn
Region	Virginia (VA)
Postal code	20147
Country	United States (US)
Continent	North America (NA)
Metro code	511
Coordinates	39.018 (lat) / -77.539 (long)
Time	2021-06-10 05:37:34 (America/New_York)
NETWORK	
IP address	193.123.148.38
Hostname	193.123.148.38
Provider	ORACLE-BMC-31898
ASN	31898

2. On Shanghai, join the above meeting using my personal Zoom ID
It creates a P2P connection between Shanghai and London
192.168.1.108 is the local IP of my computer
78.141.228.20 is the IP of VPS in London
180.167.204.122 is the public IP of my computer in Shanghai

Wireshark on Shanghai:



Wireshark on London:



There are some related discussions on Reddit:
https://www.reddit.com/r/sysadmin/comments/fk3qqw/zoom_is_it_p2p_or_cloud_server_based_technology/fkr0bv5?utm_source=share&utm_medium=web2x&context=3
I have contacted Zoom Support and they said that Zoom does support p2p only when there are 2 participants in meeting.

I repeated this procedure several times using the same network setup, P2P connection is not initiated every time and cannot find a pattern of it.

Besides, I also tried the above tests from VPS provisioned in Australia and Singapore. When P2P connection is not established, it still connects to Zoom US data centers, even though Zoom has data centers in Australia and Singapore.

Below is a traceroute result from Singapore to one of Zoom server

```
C:\Users\Administrator>tracert 193.123.30.9
Tracing route to 193.123.30.9 over a maximum of 30 hops

  1    *     *     *     Request timed out.
  2    22 ms 20 ms 19 ms  45.32.98.129      // still Singapore
  3    *     *     *     Request timed out.
  4    *     *     *     Request timed out.
  5    182 ms   158 ms   151 ms  et-0-0-3-1.cr5-sin1.ip4.gtt.net
[103.232.18.41]
  6    184 ms   185 ms   184 ms  ae12.cr3-phx1.ip4.gtt.net
[89.149.186.54]
  7    179 ms   180 ms   179 ms  140.91.195.6
  8    *     *     *     Request timed out.
  9    *     *     *     Request timed out.
 10    *     *     *     Request timed out.
 11    *     *     *     Request timed out.
 12    *     *     *     Request timed out.
 13    *     *     *     Request timed out.
 14    *     *     *     Request timed out.
 15    *     *     *     Request timed out.
```