Aruba 无线中 IPerf3 的使用

IPerf3 是一款带宽测试工具，它支持调节各种参数，比如通信协议，数据包个数，发送持续时间，测试完会报告网络带宽，丢包率和其他参数。详细的使用在网上有很多，可以自行百度。

Aruba 控制器和 IAP 都支持 IPerf 测试。

使用的控制器：7005. 8.10.0.6
使用的 AP：315

控制器开启 iperf server 功能

可以用 AP 或 controller 做 server：

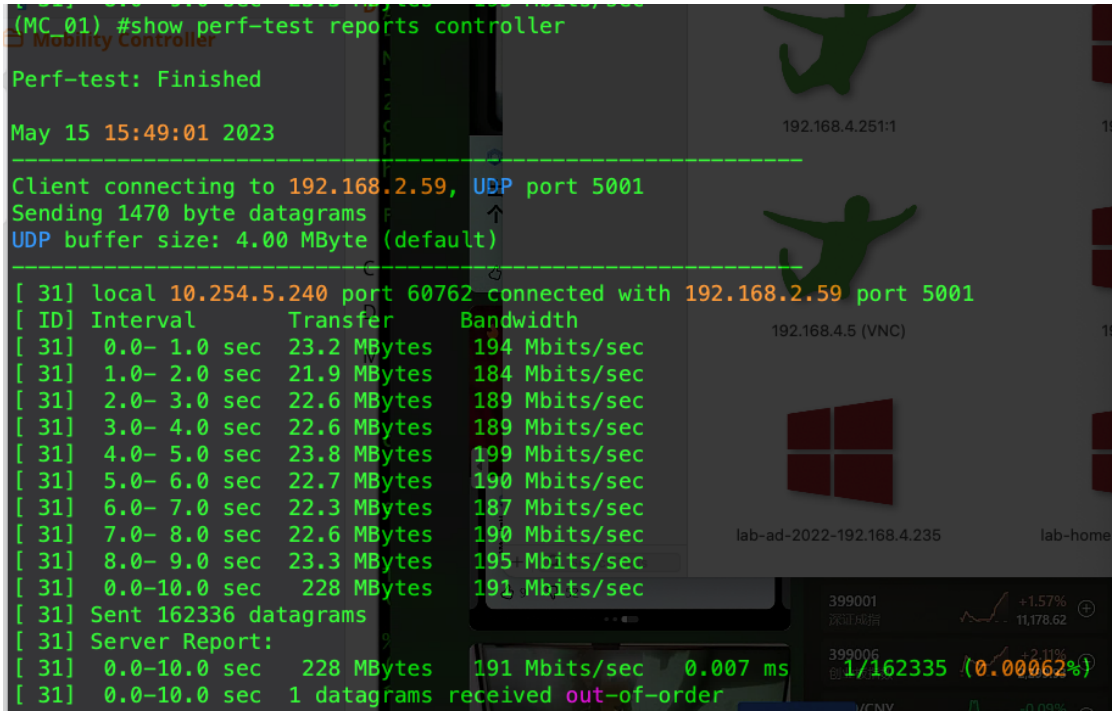
当使用 controller 做 server 的时候会提示 Iperf Server cannot be Master IP，但我用 8.6.0.19 的 7005 就没有这个提示。

```
(home_ac) [mynode] #perf-test
client                  perf-test runs in client mode
port                    perf-test default port 5201
server                  perf-test runs in server mode

(home_ac) [mynode] #perf-test server
start                   Start perf-test process
stop                    Stop perf-test process

(home_ac) [mynode] #perf-test server st
start                   Start perf-test process
stop                    Stop perf-test process

(home_ac) [mynode] #perf-test server start
ap                      perf-test on the AP
controller              perf-test on the controller

(home_ac) [mynode] #perf-test server start controller
tcp                     Use TCP (default)
udp                     Use UDP
<cr>

(home_ac) [mynode] #perf-test server start controller

Command Failed:Iperf Server cannot be Master IP
```

AP 和 controller 都可以作为 client 去测试：

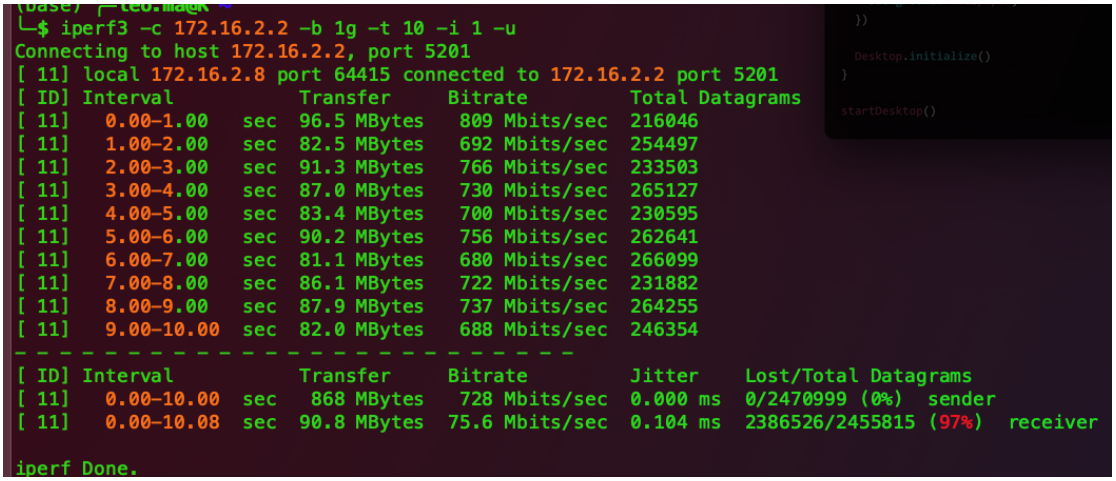
```
(MC_01) #perf-test client start controller host 192.168.2.59 udp bandwidth 300M

Perf-test client has started.
(MC_01) #
```

通过 show perf-test reports controller 来查看测试的报告：



```
(MC_01) #show perf-test reports controller

Perf-test: Finished

May 15 15:49:01 2023
------------------------------------------------------------
Client connecting to 192.168.2.59, UDP port 5001
Sending 1470 byte datagrams
UDP buffer size: 4.00 MByte (default)
------------------------------------------------------------
[ 31] local 10.254.5.240 port 60762 connected with 192.168.2.59 port 5001
[ ID] Interval       Transfer     Bandwidth
[ 31]  0.0- 1.0 sec  23.2 MBytes   194 Mbits/sec
[ 31]  1.0- 2.0 sec  21.9 MBytes   184 Mbits/sec
[ 31]  2.0- 3.0 sec  22.6 MBytes   189 Mbits/sec
[ 31]  3.0- 4.0 sec  22.6 MBytes   189 Mbits/sec
[ 31]  4.0- 5.0 sec  23.8 MBytes   199 Mbits/sec
[ 31]  5.0- 6.0 sec  22.7 MBytes   190 Mbits/sec
[ 31]  6.0- 7.0 sec  22.3 MBytes   187 Mbits/sec
[ 31]  7.0- 8.0 sec  22.6 MBytes   190 Mbits/sec
[ 31]  8.0- 9.0 sec  23.3 MBytes   195 Mbits/sec
[ 31]  0.0-10.0 sec   228 MBytes   191 Mbits/sec
[ 31] Sent 162336 datagrams
[ 31] Server Report:
[ 31]  0.0-10.0 sec   228 MBytes   191 Mbits/sec   0.007 ms  1/162335 (0.00062%)
[ 31]  0.0-10.0 sec  1 datagrams received out-of-order
```

也可以直接用 pc 向 AP 或 controller 做测试:



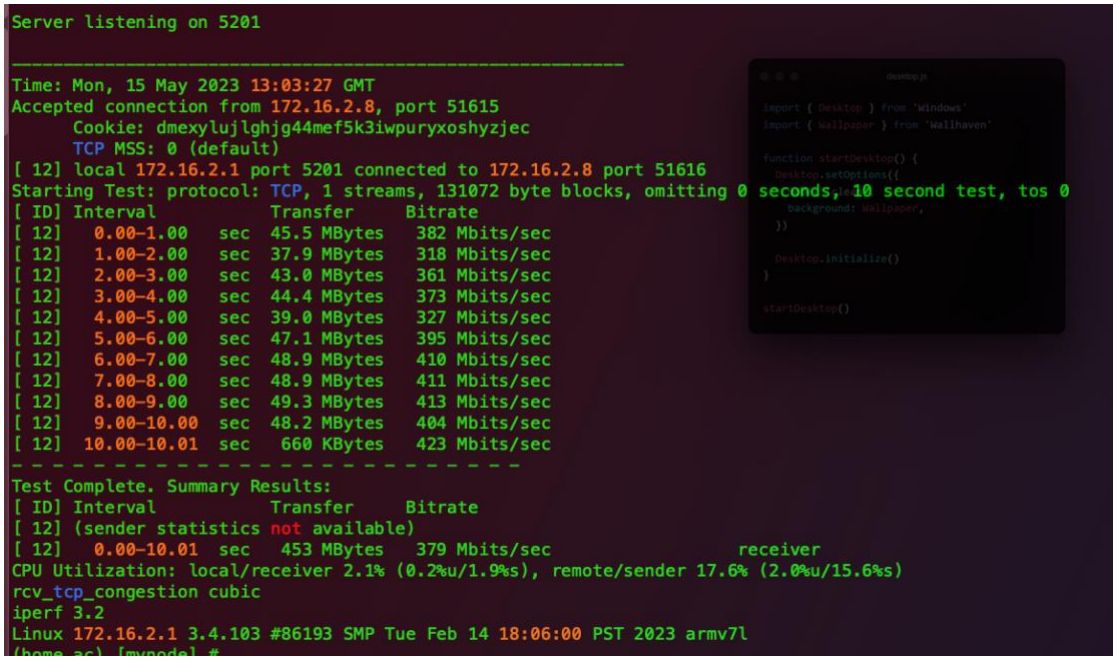
```
└─$ iperf3 -c 172.16.2.2 -b 1g -t 10 -i 1 -u
Connecting to host 172.16.2.2, port 5201
[ 11] local 172.16.2.8 port 64415 connected to 172.16.2.2 port 5201
[ ID] Interval           Transfer     Bitrate         Total Datagrams
[ 11]   0.00-1.00   sec  96.5 MBytes   809 Mbits/sec  216046
[ 11]   1.00-2.00   sec  82.5 MBytes   692 Mbits/sec  254497
[ 11]   2.00-3.00   sec  91.3 MBytes   766 Mbits/sec  233503
[ 11]   3.00-4.00   sec  87.0 MBytes   730 Mbits/sec  265127
[ 11]   4.00-5.00   sec  83.4 MBytes   700 Mbits/sec  230595
[ 11]   5.00-6.00   sec  90.2 MBytes   756 Mbits/sec  262641
[ 11]   6.00-7.00   sec  81.1 MBytes   680 Mbits/sec  266099
[ 11]   7.00-8.00   sec  86.1 MBytes   722 Mbits/sec  231882
[ 11]   8.00-9.00   sec  87.9 MBytes   737 Mbits/sec  264255
[ 11]   9.00-10.00  sec  82.0 MBytes   688 Mbits/sec  246354
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Jitter    Lost/Total Datagrams
[ 11]   0.00-10.00  sec   868 MBytes   728 Mbits/sec  0.000 ms  0/2470999 (0%)  sender
[ 11]   0.00-10.08  sec  90.8 MBytes  75.6 Mbits/sec  0.104 ms  2386526/2455815 (97%)  receiver

iperf Done.
```

在控制器上查看报告:

```
-----------------------------------------------------------
Server listening on 5201
-----------------------------------------------------------
Time: Mon, 15 May 2023 12:49:23 GMT
Accepted connection from 172.16.2.8, port 50356
      Cookie: krrpaq2n7kwetkjpxdlgvygnp6dhcqyoxwwd
[ 12] local 172.16.2.2 port 5201 connected to 172.16.2.8 port 64415
Starting Test: protocol: UDP, 1 streams, 1374 byte blocks, omitting 0 seconds, 10 second test, tos 0
[ ID] Interval           Transfer     Bitrate         Jitter    Lost/Total Datagrams
[ 12]   0.00-1.00   sec  5.93 MBytes  49.8 Mbits/sec  0.070 ms  85282/89810 (95%)
[ 12]   1.00-2.00   sec  10.0 MBytes  84.0 Mbits/sec  0.161 ms  294608/302246 (97%)
[ 12]   2.00-3.00   sec  9.47 MBytes  79.5 Mbits/sec  0.107 ms  215819/223048 (97%)
[ 12]   3.00-4.00   sec  9.69 MBytes  81.3 Mbits/sec  0.048 ms  228364/235760 (97%)
[ 12]   4.00-5.00   sec  10.3 MBytes  86.3 Mbits/sec  0.045 ms  264437/272287 (97%)
[ 12]   5.00-6.00   sec  8.20 MBytes  68.8 Mbits/sec  0.082 ms  214243/220504 (97%)
[ 12]   6.00-7.00   sec  10.2 MBytes  86.0 Mbits/sec  0.098 ms  238612/246431 (97%)
[ 12]   7.00-8.00   sec  6.82 MBytes  57.2 Mbits/sec  0.142 ms  261540/266747 (98%)
[ 12]   8.00-9.00   sec  8.68 MBytes  72.8 Mbits/sec  0.043 ms  238122/244746 (97%)
[ 12]   9.00-10.00  sec  9.27 MBytes  77.7 Mbits/sec  0.060 ms  264460/271534 (97%)
[ 12]  10.00-10.08  sec  2.18 MBytes   245 Mbits/sec  0.104 ms  81039/82702 (98%)
- - - - - - - - - - - - - - - - - - - - - - - - -
Test Complete. Summary Results:
[ ID] Interval           Transfer     Bitrate         Jitter    Lost/Total Datagrams
[ 12] (sender statistics not available)
[SUM]  0.0-10.1 sec  12 datagrams received out-of-order
[ 12]   0.00-10.08  sec  90.8 MBytes  75.6 Mbits/sec  0.104 ms  2386526/2455815 (97%)  receiver

CPU Utilization: local/receiver 2.7% (0.5%u/2.3%s), remote/sender 66.8% (9.5%u/57.3%s)
iperf 3.2
Linux 172.16.2.2 3.4.103 #86193 SMP Tue Feb 14 18:06:00 PST 2023 armv7l
```

TCP 测试：

```
└─$ iperf3 -c 172.16.2.1 -b 1g -t 10 -i 1
Connecting to host 172.16.2.1, port 5201
[ 11] local 172.16.2.8 port 51616 connected to 172.16.2.1 port 5201
[ ID] Interval           Transfer     Bitrate
[ 11]   0.00-1.00   sec  46.3 MBytes   389 Mbits/sec
[ 11]   1.00-2.00   sec  38.1 MBytes   319 Mbits/sec
[ 11]   2.00-3.00   sec  43.1 MBytes   361 Mbits/sec
[ 11]   3.00-4.00   sec  44.4 MBytes   372 Mbits/sec
[ 11]   4.00-5.00   sec  39.1 MBytes   328 Mbits/sec
[ 11]   5.00-6.00   sec  46.9 MBytes   393 Mbits/sec
[ 11]   6.00-7.00   sec  49.1 MBytes   412 Mbits/sec
[ 11]   7.00-8.00   sec  49.0 MBytes   411 Mbits/sec
[ 11]   8.00-9.00   sec  49.1 MBytes   412 Mbits/sec
[ 11]   9.00-10.00  sec  48.1 MBytes   403 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate
[ 11]   0.00-10.00  sec   453 MBytes   380 Mbits/sec                  sender
[ 11]   0.00-10.01  sec   453 MBytes   379 Mbits/sec                  receiver
```



IAP 使用 Iperf

在 IAP 中只能作为 client 去测试；可以配置 server 信息让 IAP 定时去测试，也可以使用单独的命令一次性测试：

注：我在测试的时候发现时好时不好，没有找到原因，感觉 IAP 的 speed-test 不太好用

```
speed-test
 include-reverse
 server-ip 192.168.4.250
 protocol udp
 time-interval 600
 bandwidth 500
 sec-to-measure 20
 parallel 10
 omit 5
```

使用一次性命令测试：

speed-test 192.168.4.250 udp bandwidth 100

```
Speed Test results :
Time of Execution :Mon, 15 May 2023 13:41:17
Server IP :192.168.4.250
Local IP :192.168.4.1
Local Port :51355
Remote Port :5201
MAC :cc:d0:83:cf:d2:e4
System Name :ACMX_303
Protocol :UDP
Duration :10
Upstream Bytes :124999000
Upstream Bandwidth(Mbps) :100.00
upstream Datagrams sent :124999
upstream Jitter(millisec) :0.0310
Upstream Lost packets :0
ACMX_303# speed-test 192.168.4.250 tcp bandwidth 100
ACMX_303# show speed-test data

Speed Test results :
Time of Execution :Mon, 15 May 2023 13:43:34
Server IP :192.168.4.250
Local IP :192.168.4.1
Local Port :49756
Remote Port :5201
MAC :cc:d0:83:cf:d2:e4
System Name :ACMX_303
Protocol :TCP
Duration :10
Upstream Bytes :125021236
Upstream Bandwidth(Mbps) :100.02
upstream retries :0
```

IAP 测试中如果 server 是 controller 会失败，server 使用 windows 客户端可以成功:

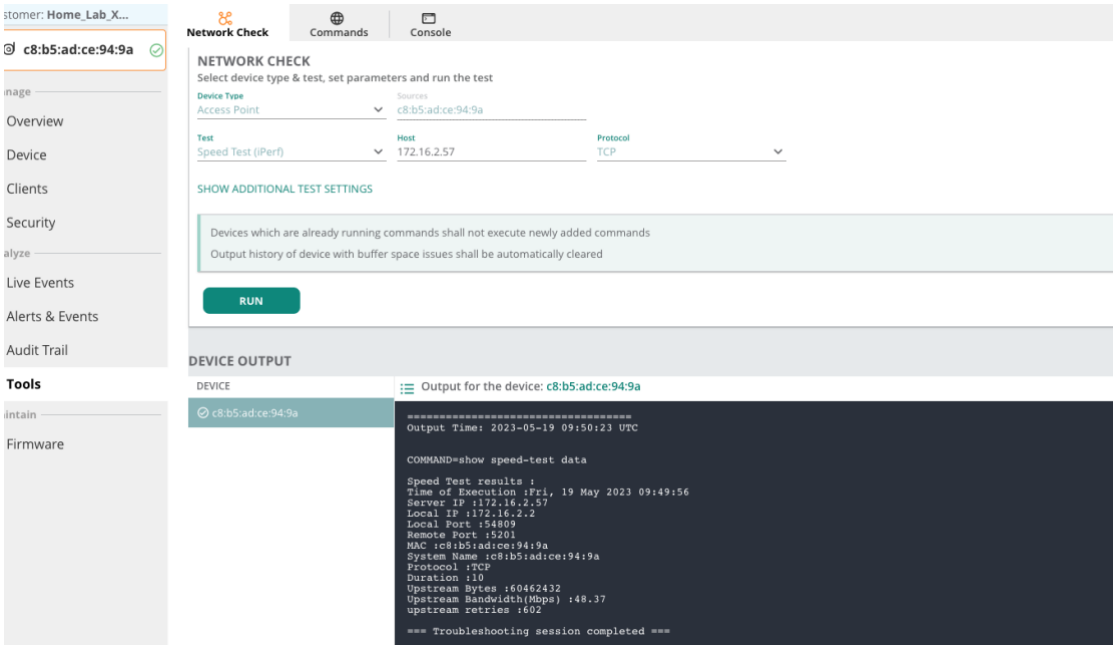
```
Server listening on 5201
-----------------------------------------------------------
Accepted connection from 192.168.4.1, port 49754
[  5] local 192.168.4.250 port 5201 connected to 192.168.4.1 port 51355
[ ID] Interval           Transfer     Bandwidth       Jitter    Lost/Total Datagrams
[  5]   0.00-1.00   sec  11.5 MBytes  96.6 Mbits/sec  0.040 ms  0/12081 (0%)
[  5]   1.00-2.00   sec  11.9 MBytes   100 Mbits/sec  0.036 ms  0/12504 (0%)
[  5]   2.00-3.00   sec  11.9 MBytes   100 Mbits/sec  0.049 ms  0/12501 (0%)
[  5]   3.00-4.00   sec  11.9 MBytes   100 Mbits/sec  0.044 ms  0/12497 (0%)
[  5]   4.00-5.00   sec  11.9 MBytes   100 Mbits/sec  0.045 ms  0/12500 (0%)
[  5]   5.00-6.00   sec  11.9 MBytes   100 Mbits/sec  0.034 ms  0/12497 (0%)
[  5]   6.00-7.00   sec  11.9 MBytes   100 Mbits/sec  0.054 ms  0/12500 (0%)
[  5]   7.00-8.00   sec  11.9 MBytes   100 Mbits/sec  0.023 ms  0/12507 (0%)
[  5]   8.00-9.00   sec  11.9 MBytes   100 Mbits/sec  0.044 ms  0/12499 (0%)
[  5]   9.00-10.00  sec  11.9 MBytes   100 Mbits/sec  0.050 ms  0/12494 (0%)
[  5]  10.00-10.03  sec   406 KBytes   101 Mbits/sec  0.031 ms  0/416 (0%)
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bandwidth       Jitter    Lost/Total Datagrams
[  5]   0.00-10.03  sec  0.00 Bytes  0.00 bits/sec  0.031 ms  0/124996 (0%)
iperf3: the client has unexpectedly closed the connection
-----------------------------------------------------------
Server listening on 5201
-----------------------------------------------------------
Accepted connection from 192.168.4.1, port 49755
[  5] local 192.168.4.250 port 5201 connected to 192.168.4.1 port 49756
[ ID] Interval           Transfer     Bandwidth
[  5]   0.00-1.01   sec  11.1 MBytes  92.6 Mbits/sec
[  5]   1.01-2.00   sec  11.9 MBytes   100 Mbits/sec
[  5]   2.00-3.00   sec  11.9 MBytes  99.9 Mbits/sec
[  5]   3.00-4.01   sec  12.0 MBytes   100 Mbits/sec
[  5]   4.01-5.00   sec  11.9 MBytes   100 Mbits/sec
[  5]   5.00-6.00   sec  11.9 MBytes   100 Mbits/sec
[  5]   6.00-7.01   sec  11.9 MBytes  99.6 Mbits/sec
[  5]   7.01-8.00   sec  11.9 MBytes   100 Mbits/sec
[  5]   8.00-9.00   sec  12.0 MBytes   100 Mbits/sec
[  5]   9.00-10.01  sec  11.9 MBytes  99.3 Mbits/sec
[  5]  10.01-10.08  sec   885 KBytes   104 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bandwidth
[  5]   0.00-10.08  sec  0.00 Bytes  0.00 bits/sec                  sender
[  5]   0.00-10.08  sec   119 MBytes  99.3 Mbits/sec                  receiver
iperf3: the client has unexpectedly closed the connection
-----------------------------------------------------------
```

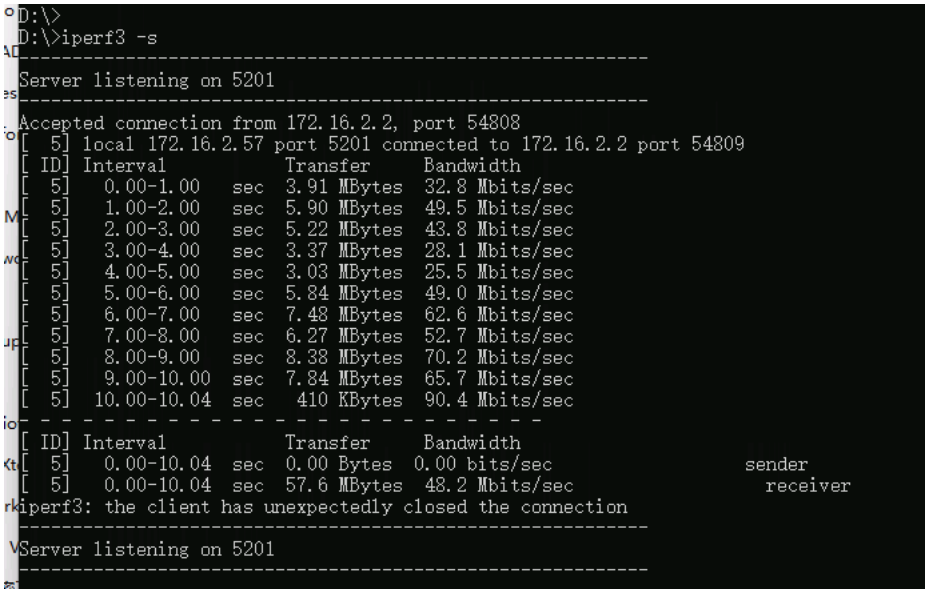
Central 和 UXI 也是可以使用 iperf，由于条件限制这里不做测试，希望有条件者测试完可以分享：

Aruba Central iperf 测试：

https://github.com/michaelrosejr/aruba_central_speedtest

central 貌似上没有办法设置 option 参数





UXi iperf 测试:

https://help.capenetworks.com/en/articles/2113017-iperf-testing