

## 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) #
(MC_01) #perf-test client start controller host 192.168.2.59 udp bandwidth 300M
Mobility Controller
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
[ 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:

```
(base) # 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/Totals 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: krrpaq2n7kwetkjpdxldgvygnp6dhcqyoxwud
[ 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%u), remote/sender 66.8% (9.5%u/57.3%u)
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
[ 11] 0.00-10.01   sec  453 MBytes  379 Mbits/sec
sender
receiver

```

```
Server listening on 5201
-----
Time: Mon, 15 May 2023 13:03:27 GMT
Accepted connection from 172.16.2.8, port 51615
  Cookie: dmexylujlghjg44mef5k3iwpuryxoshyzjec
  TCP MSS: 0 (default)
[ 12] local 172.16.2.1 port 5201 connected to 172.16.2.8 port 51616
Starting Test: protocol: TCP, 1 streams, 131072 byte blocks, omitting 0 seconds, 10 second test, tos 0
[ ID] Interval      Transfer      Bitrate
[ 12] 0.00-1.00    sec 45.5 MBytes  382 Mbits/sec
[ 12] 1.00-2.00    sec 37.9 MBytes  318 Mbits/sec
[ 12] 2.00-3.00    sec 43.0 MBytes  361 Mbits/sec
[ 12] 3.00-4.00    sec 44.4 MBytes  373 Mbits/sec
[ 12] 4.00-5.00    sec 39.0 MBytes  327 Mbits/sec
[ 12] 5.00-6.00    sec 47.1 MBytes  395 Mbits/sec
[ 12] 6.00-7.00    sec 48.9 MBytes  410 Mbits/sec
[ 12] 7.00-8.00    sec 48.9 MBytes  411 Mbits/sec
[ 12] 8.00-9.00    sec 49.3 MBytes  413 Mbits/sec
[ 12] 9.00-10.00   sec 48.2 MBytes  404 Mbits/sec
[ 12] 10.00-10.01  sec 660 KBytes  423 Mbits/sec
-----
Test Complete. Summary Results:
[ ID] Interval      Transfer      Bitrate
[ 12] (sender statistics not available)
[ 12] 0.00-10.01   sec 453 MBytes  379 Mbits/sec          receiver
CPU Utilization: local/receiver 2.1% (0.2%/1.9%), remote/sender 17.6% (2.0%/15.6%)
rcv_tcp_congestion cubic
iperf 3.2
Linux 172.16.2.1 3.4.103 #86193 SMP Tue Feb 14 18:06:00 PST 2023 armv7l
(home ac) [mynode] #
```

```
#!/usr/bin/perl

use IO::Socket;

my $server_ip = '172.16.2.8';
my $server_port = 51615;

my $client_ip = '172.16.2.1';
my $client_port = 5201;

my $server_socket = IO::Socket::INET->new(
    Listen => 5,
    LocalAddr => $server_ip,
    LocalPort => $server_port,
    Proto => 'tcp',
    Type => 'server'
);

my $client_socket = IO::Socket::INET->new(
    PeerAddr => $client_ip,
    PeerPort => $client_port,
    Proto => 'tcp',
    Type => 'client'
);

my $server_socket->accept($client_socket);

my $client_socket->send("10 second test, tos 0");

my $server_socket->close();
my $client_socket->close();
```

## 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(millisecond) :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
ACMX_303#
```

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    0/12496 (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 UX1 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](https://github.com/michaelrosejr/aruba_central_speedtest)

central 貌似上没有办法设置 option 参数

The screenshot shows the Aruba Central Network Check interface. On the left is a navigation menu with options like Overview, Device, Clients, Security, Live Events, Alerts & Events, Audit Trail, Tools, and Firmware. The main area is titled 'NETWORK CHECK' and includes a 'Device Type' dropdown set to 'Access Point' and an 'Access Point' dropdown set to 'c8:b5:ad:ce:94:9a'. The 'Test' dropdown is set to 'Speed Test (iPerf)' and the 'Host' is '172.16.2.57'. There is a 'RUN' button. Below this is the 'DEVICE OUTPUT' section, which shows the output of the command 'show speed-test data' for the device 'c8:b5:ad:ce:94:9a'. The output includes details such as 'Speed Test results', 'Time of Execution', 'Server IP', 'Local IP', 'Local Port', 'Remote Port', 'MAC', 'System Name', 'Protocol', 'Duration', 'Upstream Bytes', 'Upstream Bandwidth', and 'upstream retries'.

```
D:\>
D:\>iperf3 -s
-----
Server listening on 5201
-----
Accepted connection from 172.16.2.2, port 54808
[ 5] local 172.16.2.57 port 5201 connected to 172.16.2.2 port 54809
-----
[ ID] Interval          Transfer          Bandwidth
-----
[ 5] 0.00-1.00 sec      3.91 MBytes      32.8 Mbits/sec
[ 5] 1.00-2.00 sec      5.90 MBytes      49.5 Mbits/sec
[ 5] 2.00-3.00 sec      5.22 MBytes      43.8 Mbits/sec
[ 5] 3.00-4.00 sec      3.37 MBytes      28.1 Mbits/sec
[ 5] 4.00-5.00 sec      3.03 MBytes      25.5 Mbits/sec
[ 5] 5.00-6.00 sec      5.84 MBytes      49.0 Mbits/sec
[ 5] 6.00-7.00 sec      7.48 MBytes      62.6 Mbits/sec
[ 5] 7.00-8.00 sec      6.27 MBytes      52.7 Mbits/sec
[ 5] 8.00-9.00 sec      8.38 MBytes      70.2 Mbits/sec
[ 5] 9.00-10.00 sec     7.84 MBytes      65.7 Mbits/sec
[ 5] 10.00-10.04 sec    410 KBytes       90.4 Mbits/sec
-----
[ ID] Interval          Transfer          Bandwidth
-----
[ 5] 0.00-10.04 sec     0.00 Bytes        0.00 bits/sec
[ 5] 0.00-10.04 sec     57.6 MBytes       48.2 Mbits/sec
-----
iperf3: the client has unexpectedly closed the connection
-----
Server listening on 5201
-----
```

UXi iperf 测试:

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