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CENTRO ENGENHARIA ELÉTRICA E INFORMÁTICA– CEEI
DEPARTAMENTO DE SISTEMAS E COMPUTAÇÃO – DSC

CURSO: CIÊNCIA DA COMPUTAÇÃO
DISCIPLINA: REDES DE COMPUTADORES
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Relatório da análise com o iPerf

CAMPINA GRANDE
2019

Utilizando no servidor o comando -s e no cliente -c localhost

```
douglas@douglas:~$ iperf -c localhost
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 2.50 MByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 35026 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  55.4 GBytes  47.6 Gbits/sec
douglas@douglas:~$
```

```
^Cdouglas@douglas:~$ iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size:  128 KByte (default)
------------------------------------------------------------
[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 35026
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-10.0 sec  55.4 GBytes  47.6 Gbits/sec
```

Ao utilizar esse comando sem parâmetros adicionais, o iPerf testa a rede com características *defaults*, como o tamanho da janela sendo 128 kbytes.

Utilizando no servidor o comando -s e no cliente -c localhost -w 1 | 2.000 | 10.000 | 50.000 | 100.000

```
douglas@douglas:~$ iperf -c localhost -w 1
WARNING: TCP window size set to 1 bytes. A small window size
will give poor performance. See the Iperf documentation.
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 4.50 KByte (WARNING: requested 1.00 Byte)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36040 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  22.8 MBytes  19.0 Mbits/sec
douglas@douglas:~$
douglas@douglas:~$ iperf -c localhost -w 2000
WARNING: TCP window size set to 2000 bytes. A small window size
will give poor performance. See the Iperf documentation.
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 4.50 KByte (WARNING: requested 1.95 KByte)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36042 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  21.8 MBytes  18.2 Mbits/sec
douglas@douglas:~$
douglas@douglas:~$ iperf -c localhost -w 10000
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 19.5 KByte (WARNING: requested 9.77 KByte)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36044 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  23.5 MBytes  19.6 Mbits/sec
```

```
douglas@douglas:~$ iperf -c localhost -w 50000
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 97.7 KByte (WARNING: requested 48.8 KByte)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36052 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  13.9 GBytes  11.9 Gbits/sec
douglas@douglas:~$
douglas@douglas:~$ iperf -c localhost -w 100000
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size:  195 KByte (WARNING: requested 97.7 KByte)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36058 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  74.2 GBytes  63.8 Gbits/sec
```

Servidor

```
douglas@douglas:~$ iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size:  128 KByte (default)
------------------------------------------------------------
[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36040
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-10.0 sec  22.8 MBytes  19.0 Mbits/sec


[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36042
[  4]  0.0-10.0 sec  21.8 MBytes  18.2 Mbits/sec


[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36044
[  4]  0.0-10.0 sec  23.5 MBytes  19.6 Mbits/sec


[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36052
[  4]  0.0-10.0 sec  13.9 GBytes  11.9 Gbits/sec


[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36058
[  4]  0.0-10.0 sec  74.2 GBytes  63.8 Gbits/sec
```

O comando -w configura o tamanho da janela de *buffer* do *socket*. Podemos configurar um valor de tamanho para essa janela, e quando ela é pequena, recebemos um aviso do iPerf afirmando que a utilização de uma janela pequena de *buffer* proporcionará uma performance pobre. Esse aviso é dado quando utilizamos valores como 1 e 2000, mas a partir do 10000 bytes o iPerf não considera como pequena.

Outra coisa a visualizarmos é que quando utilizamos um tamanho pequeno de janela, a largura da banda também fica pequena. No exemplo *default* anterior, tínhamos uma largura

de 47.6 Gbits/sec; já quando utilizamos uma janela de tamanho 1, temos uma largura de 19 Mbits/sec; e só quando utilizamos uma janela de 100 Kbytes obtemos uma largura de 63.8 Gbits/sec.

Utilizando no servidor o comando -s e no cliente -c localhost -M 100 | 250 | 500 | 1000 | 1500

```
douglas@douglas:~$ iperf -c localhost -M 100
WARNING: attempt to set TCP maximum segment size to 100, but got 536
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 25.0 KByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36092 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  56.8 GBytes  48.8 Gbits/sec
douglas@douglas:~$ iperf -c localhost -M 250
WARNING: attempt to set TCP maximum segment size to 250, but got 536
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 25.0 KByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36098 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  52.6 GBytes  45.2 Gbits/sec
douglas@douglas:~$ iperf -c localhost -M 500
WARNING: attempt to set TCP maximum segment size to 500, but got 536
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 45.0 KByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36100 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  57.3 GBytes  49.3 Gbits/sec
```

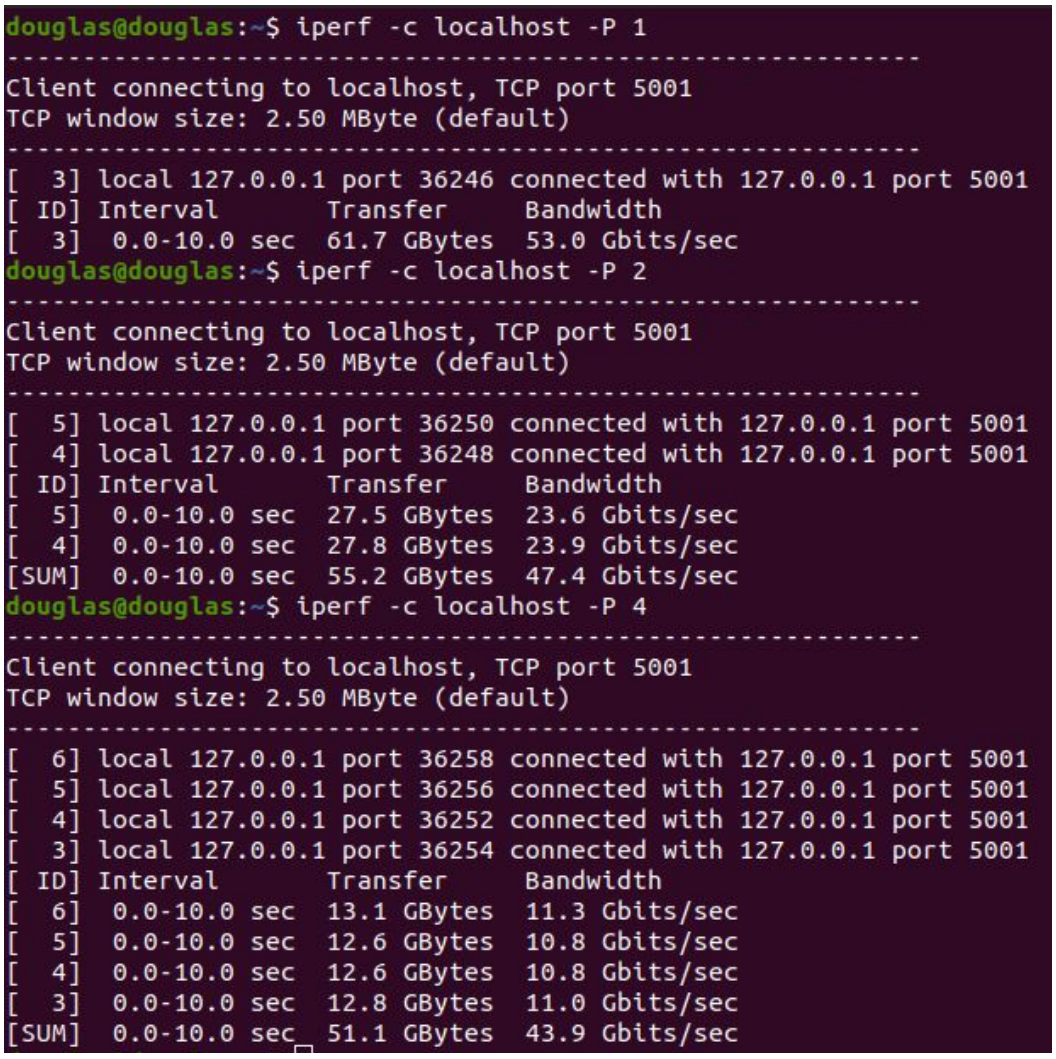
```
douglas@douglas:~$ iperf -c localhost -M 1000
WARNING: attempt to set TCP maximum segment size to 1000, but got 536
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 45.0 KByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36106 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  62.8 GBytes  54.0 Gbits/sec
douglas@douglas:~$ iperf -c localhost -M 1500
WARNING: attempt to set TCP maximum segment size to 1500, but got 536
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 85.0 KByte (default)
------------------------------------------------------------
[  3] local 127.0.0.1 port 36108 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  61.8 GBytes  53.1 Gbits/sec
```

Servidor

```
douglas@douglas:~$ iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size:  128 KByte (default)
------------------------------------------------------------
[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36092
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-10.0 sec  56.8 GBytes  48.7 Gbits/sec

[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36098
[  4]  0.0-10.0 sec  52.6 GBytes  45.2 Gbits/sec

[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36100
[  4]  0.0-10.0 sec  57.3 GBytes  49.3 Gbits/sec

[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36106
[  4]  0.0-10.0 sec  62.8 GBytes  54.0 Gbits/sec

[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36108
[  4]  0.0-10.0 sec  61.8 GBytes  53.0 Gbits/sec
```

Com o comando -M podemos ajustar o tamanho máximo do segmento a ser enviado. Mas como podemos ver, em todos os valores obtemos a informação de que não importa qual MSS você define, você sempre recebe um MSS de 536. O máximo que o iPerf faz é oferecer um *warning* de que houve uma tentativa de mudança do MSS.

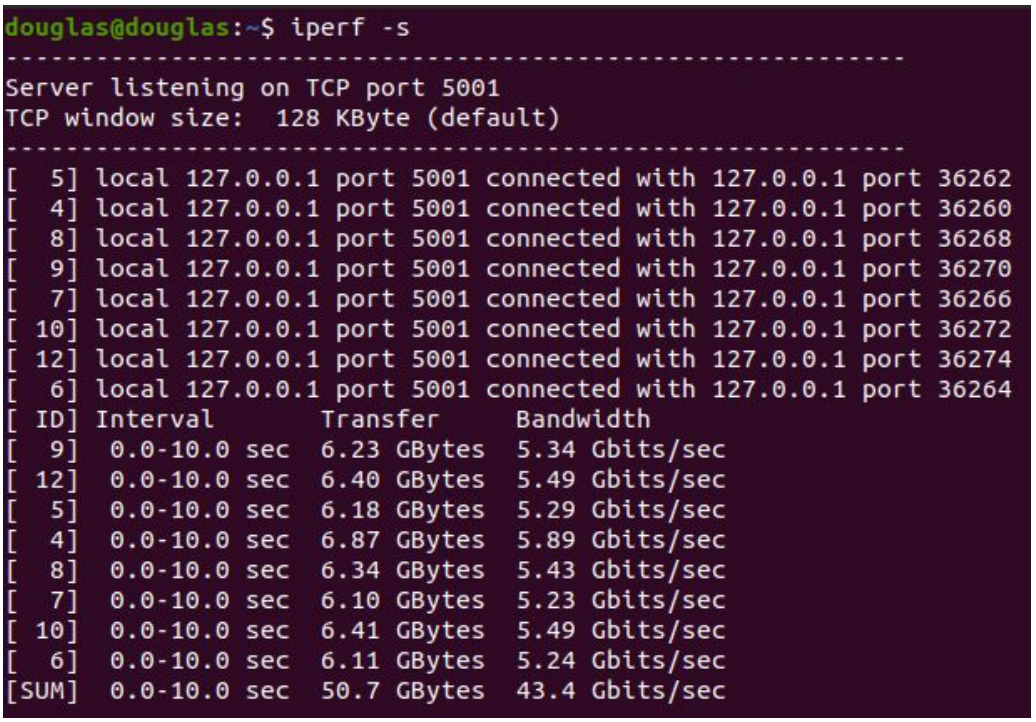
Utilizando no servidor o comando -s e no cliente -c localhost -P 1 | 2 | 4 | 8



```
douglas@douglas:~$ iperf -c localhost -P 8
------------------------------------------------------------
Client connecting to localhost, TCP port 5001
TCP window size: 2.50 MByte (default)
------------------------------------------------------------
[ 10] local 127.0.0.1 port 36274 connected with 127.0.0.1 port 5001
[  3] local 127.0.0.1 port 36260 connected with 127.0.0.1 port 5001
[  4] local 127.0.0.1 port 36262 connected with 127.0.0.1 port 5001
[  6] local 127.0.0.1 port 36266 connected with 127.0.0.1 port 5001
[  8] local 127.0.0.1 port 36270 connected with 127.0.0.1 port 5001
[  9] local 127.0.0.1 port 36272 connected with 127.0.0.1 port 5001
[  5] local 127.0.0.1 port 36264 connected with 127.0.0.1 port 5001
[  7] local 127.0.0.1 port 36268 connected with 127.0.0.1 port 5001
[ ID] Interval       Transfer     Bandwidth
[ 10]  0.0-10.0 sec  6.40 GBytes  5.49 Gbits/sec
[  8]  0.0-10.0 sec  6.23 GBytes  5.34 Gbits/sec
[  9]  0.0-10.0 sec  6.41 GBytes  5.50 Gbits/sec
[  5]  0.0-10.0 sec  6.11 GBytes  5.25 Gbits/sec
[  3]  0.0-10.0 sec  6.87 GBytes  5.89 Gbits/sec
[  4]  0.0-10.0 sec  6.18 GBytes  5.30 Gbits/sec
[  6]  0.0-10.0 sec  6.10 GBytes  5.24 Gbits/sec
[  7]  0.0-10.0 sec  6.34 GBytes  5.43 Gbits/sec
[SUM]  0.0-10.0 sec  50.7 GBytes  43.4 Gbits/sec
```

Servidor

```
douglas@douglas:~$ iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size:  128 KByte (default)
------------------------------------------------------------
[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36246
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-10.0 sec  61.7 GBytes  53.0 Gbits/sec

[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36248
[  5] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36250
[  4]  0.0-10.0 sec  27.8 GBytes  23.8 Gbits/sec
[  5]  0.0-10.0 sec  27.5 GBytes  23.6 Gbits/sec
[SUM]  0.0-10.0 sec  55.2 GBytes  47.4 Gbits/sec

[  5] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36254
[  8] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36258
[  7] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36256
[  4] local 127.0.0.1 port 5001 connected with 127.0.0.1 port 36252
[  5]  0.0-10.0 sec  12.8 GBytes  11.0 Gbits/sec
[  8]  0.0-10.0 sec  13.1 GBytes  11.3 Gbits/sec
[  7]  0.0-10.0 sec  12.6 GBytes  10.8 Gbits/sec
[  4]  0.0-10.0 sec  12.6 GBytes  10.8 Gbits/sec
[SUM]  0.0-10.0 sec  51.1 GBytes  43.9 Gbits/sec
```



E o comando -P define o número de *threads* de clientes paralelas rodando. Uma característica que podemos visualizar é a divisão da largura da banda entre as *threads*. Tendo uma largura total próxima à padrão, as *threads* recebem porções aproximadamente iguais.