NASA hw2

B04902045

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Network Administration

1

Modern Ethernet networks often use network switches to connect their links rather than hub right now. Since each link that connects to the switch has its own separate port, multiple access MAC protocol is no longer useful. For example, 10 Gibabit Ethernet removed this protocol. Instead, it uses network switches to achieve full duplex point-to-point links.

2

After aborting (that is, transmitting the jam signal), the adapter enters an exponential backoff phase. Specifically, when transmitting a given frame, after experiencing the nth collision in a row for this frame, the adapter chooses a value for K at random from {0,1,2, . . . , 2m - 1} where m = min(n,10). The adapter then waits K * 512 bits times.

n = 5, Probability: $\frac{1}{32}$

Delay(K=4): $\frac{4*512bits}{10Mbps} = 2.048 * 10^{-4}$ s

3

Basically, I used the same command overall.
Workstation(server): iperf -s
PC(client): iperf -c <serverIP> -t 120 -i 10
120 seconds to transmit, pause 10 seconds between bandwidth report

csie wifi

```
willy@willy-X555LB:~$ iperf -c 140.112.30.32 -t 120 -i 10
------------------------------------------------------------
Client connecting to 140.112.30.32, TCP port 5001
TCP window size: 45.0 KByte (default)
------------------------------------------------------------
[  3] local 10.38.83.234 port 39620 connected with 140.112.30.32 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec  14.2 MBytes  12.0 Mbits/sec
[  3] 10.0-20.0 sec  12.4 MBytes  10.4 Mbits/sec
[  3] 20.0-30.0 sec  11.9 MBytes  9.96 Mbits/sec
[  3] 30.0-40.0 sec  10.5 MBytes  8.81 Mbits/sec
[  3] 40.0-50.0 sec  12.2 MBytes  10.3 Mbits/sec
[  3] 50.0-60.0 sec  22.6 MBytes  19.0 Mbits/sec
[  3] 60.0-70.0 sec  13.1 MBytes  11.0 Mbits/sec
[  3] 70.0-80.0 sec  19.1 MBytes  16.0 Mbits/sec
[  3] 80.0-90.0 sec  19.0 MBytes  15.9 Mbits/sec
[  3] 90.0-100.0 sec  24.0 MBytes  20.1 Mbits/sec
[  3] 100.0-110.0 sec  20.9 MBytes  17.5 Mbits/sec
[  3] 110.0-120.0 sec  26.0 MBytes  21.8 Mbits/sec
[  3]  0.0-120.1 sec   206 MBytes  14.4 Mbits/sec
```

```
Terminal - b04902045@linux1:~/nasa/hw2
[b04902045@linux1 hw2]$ ./iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
------------------------------------------------------------
[  4] local 140.112.30.32 port 5001 connected with 140.112.4.192 port 48127
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-120.2 sec   206 MBytes  14.4 Mbits/sec
```

4G(HTC Portable Hotspot)

This is done in CSIE basement, so the 4G signal is pretty weak.

```
------------------------------------------------------------
Client connecting to 140.112.30.32, TCP port 5001
TCP window size: 85.0 KByte (default)
------------------------------------------------------------
[  3] local 192.168.43.82 port 53476 connected with 140.112.30.32 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0-10.0 sec   640 KBytes   524 Kbits/sec
[  3] 10.0-20.0 sec   896 KBytes   734 Kbits/sec
[  3] 20.0-30.0 sec   512 KBytes   419 Kbits/sec
[  3] 30.0-40.0 sec   896 KBytes   734 Kbits/sec
[  3] 40.0-50.0 sec   384 KBytes   315 Kbits/sec
[  3] 50.0-60.0 sec  1.12 MBytes   944 Kbits/sec
[  3] 60.0-70.0 sec   896 KBytes   734 Kbits/sec
[  3] 70.0-80.0 sec  0.00 Bytes  0.00 bits/sec
[  3] 80.0-90.0 sec   384 KBytes   315 Kbits/sec
[  3] 90.0-100.0 sec   512 KBytes   419 Kbits/sec
[  3] 100.0-110.0 sec   384 KBytes   315 Kbits/sec
[  3] 110.0-120.0 sec   512 KBytes   419 Kbits/sec
[  3]  0.0-120.1 sec  7.12 MBytes   498 Kbits/sec
```

```
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
------------------------------------------------------------
[  4] local 140.112.30.32 port 5001 connected with 114.137.233.117 port 19204
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0-149.2 sec  7.12 MBytes   401 Kbits/sec
```

Ethernet with 204 computer