ITS413

Assignment
Phase 2

Group 8

5122800188 Jinjoong Kim

5322800608 Thanaphat Panyavoranart

Phase 2: Determine peak throughput of Wireless LAN and Ethernet

Objective

- Understand the change of throughput in different connection and situation.

Task

Using the default OpenWrt parameters, use iperf to measure the UDP throughput over each link with different sending rate.

1. Measure throughput with wired connection
2. Measure throughput with various wireless connection (B/G/B+G)

Equipment

- 2 laptops.
- Iperf
- 1 router

Comment [s1]: This aim is too generic. Throughput of what? Throughput of driving cars through Bangkok - I think not. Different situation? Do you mean whether my computer has a 14inch monitor compared to 15inch monitor. I think not. Give a specific aim(s) of your experiments.

Comment [s2]: Ok, so the tasks give you a good hint of how to improve your objective/aim.

Comment [s3]: What parameter values did you use for the experiments? What data rate? RTS threshold? Test time? …

Comment [s4]: What are the specifications of these devices, especially the network capabilities of the laptops and router.

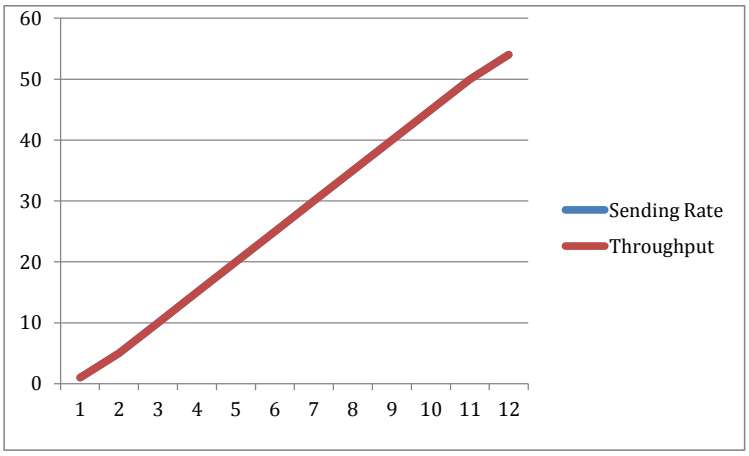
Task:

1. Measure throughput with wired connection

Comment [s5]: What iperf commands did you use for these tests?

Comment [s6]: Why did you only go up to 54Mb/s sending rate for the wired connection?

Table 1.1 wired connection		
Sending Rate	Throughput	Remark
1	1	- There is no decrease of throughput as sending rate increase.
5	5	
10	10	
15	15	
20	20	
25	25	
30	30	
35	35	
40	40	
45	45	
50	50	
54	54	



Conclusion

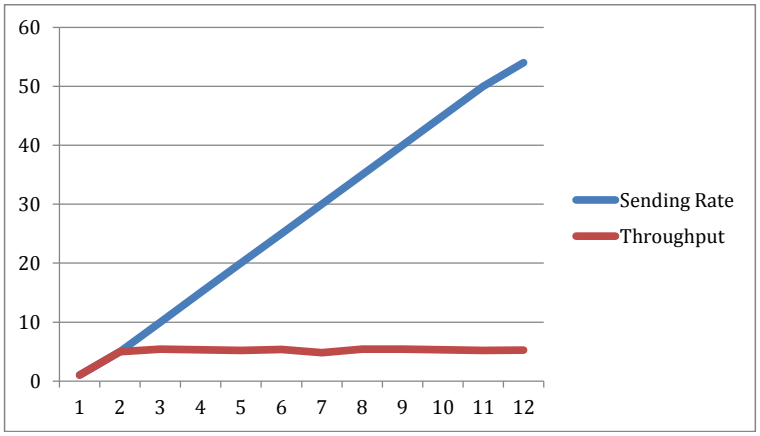
As the graph and data in table shows, there is no failure cause throughput decrease. In wired connection, the throughput is the same as the sending rate.

Comment [s7]: So your conclusion is that if I set the sending rate to 1,000,000Gb/s then the throughput will be 1,000,000Gb/s? Wow - I want to buy this device! You should have done a test that determines the maximum throughput that can be achieved over the wired link - my guess is its going to be less than the link data rate (or capacity) which is probably 100Mb/s in your experiment.

2. Measure throughput with various wireless connection (B/G/B+G)

Table 2.1 Wireless B

Sending Rate(Mb/s)	Throughput(Mb/s)	Remark
1	1	-The maximum throughput is 5.40Mb/s -The distance between the router and the laptop is 3 meter
5	5	
10	5.40	
15	5.33	
20	5.21	
25	5.35	
30	4.80	
35	5.40	
40	5.40	
45	5.31	
50	5.22	
54	5.25	



Comment [s9]: Ok, this is a good idea. Well done. Some explanation of what it means to vary from B to G would be useful (hint: what is the maximum data rate for B? G?)

Comment [s8]: Good. This in fact should be a parameter in your experiment setup.

Comment [s10]: Your plots need labels on the axis. Also, we are interested in a plot of the throughput (one axis) vs sending rate (the other axis), not as you have it.

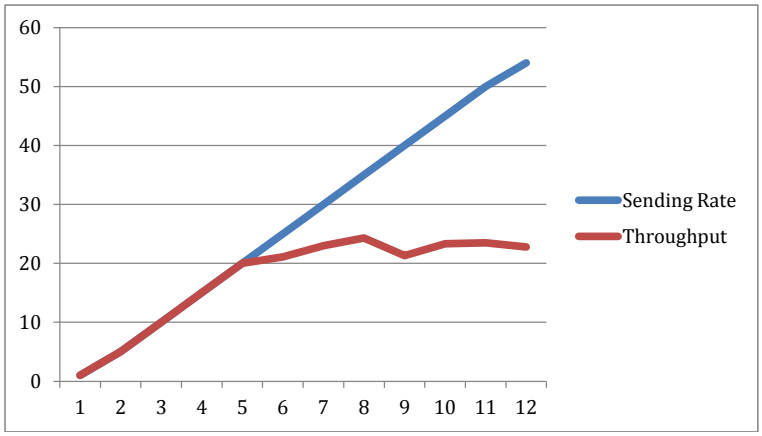
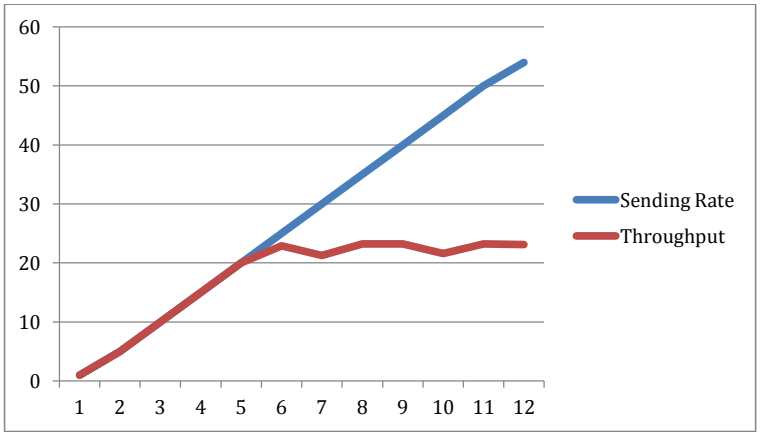


Table 2.2 Wireless G		
Sending Rate(Mb/s)	Throughput(Mb/s)	Remark
1	1	-The distance between the router and the laptop is 3 meter -The maximum throughput is 24.3 Mb/s at sending rate 35Mb/s,
5	5	
10	10	
15	15	
20	20	
25	21.1	
30	23	
35	24.3	
40	21.3	
45	23.3	
50	23.5	
54	22.8	

Table 2.3 Wireless B+G		
Sending Rate(Mb/s)	Throughput(Mb/s)	Remark
1	1	-The maximum throughput is 23.2Mb/s -The distance between the router and the laptop is 3 meter
5	5	
10	10	
15	15	
20	20	
25	22.9	
30	21.3	
35	23.2	
40	23.2	
45	21.6	
50	23.2	
54	23.1	



Observation

In any mode, after certain data rate, the throughput does not increase any higher.

The highest maximum throughput can be measured is 24.3Mb/s in G. It is less than standard 54Mb/s, but probably occurred due to headers, error, retransmission, and etc. And wireless B+G also has similar result as G, because the mixed mode allows clients use b or g, and the client used 802.11g standard.

The experiment with wireless B has the lowest throughput, 5.4Mb/s. The result is less than the result observed with wireless G and the B+G, and also less than 802.11B standard, 11Mb/s. We can assume, it is less than the standard because of overheads, same as what happened in the other modes.

Comment [s11]: Ok, you are on the right path for explaining why. Be a bit more detailed (instead of saying "etc") and this would be excellent.

Comment [s12]: Again, good starting point, but instead of assume why not investigate and find out? Looking at the lecture notes and values of slot time, DIFS, data rate etc give you a good answer.