ITS 413 Internet Technologies and Applications

Assignment: Phase 2 Report

By: Group 7

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Date: 14/02/2012

By submitting this report all members of the group listed above agree that each member has contributed approximately equal amounts to designing and performing experiments, as well as to preparing this report. All members agree that this report accurately reflects the experiments conducted by the group members, and is their own work (not works of other groups).

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Aims

This project will be about finding out maximum throughput possible on both wireless and wired. This will be carry out by having one computer using iperf to set up itself as a server connecting with the router directly through wired LAN cable. While the other computer act as a client using iperf sending data packets to the server through wired and wireless transmission. We can find out the maximum throughput by increase bandwidth used to send data 1-5 Mb/sec at a time. This data will then collected and plot into graph and with suitable trend line, we can determine the maximum throughput of each transmission medium.

Network Diagram

Figure1 : Wireless network

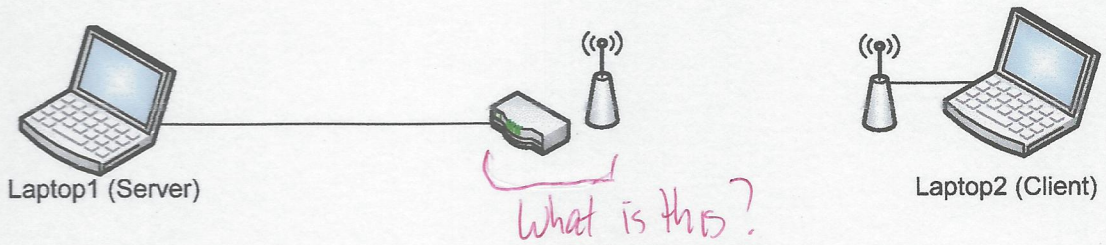
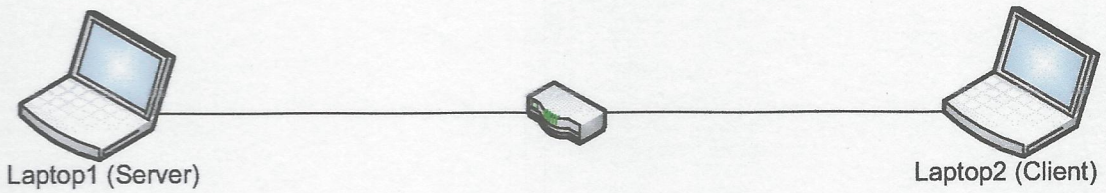
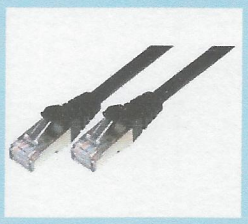


Figure2 : Wired network



Equipment Specifications

Laptop1	Laptop2	Wireless	LAN cable
			
Dell Inspiron n-series Processor intel core i7 cpu 2.0GHz Window 7	Toshiba Protege T230 Processor intel core i3 cpu 1.33GHz Window 7	Linksys wrt54gl version Backfire 10.03.1 with the Broadcom Linux 2.4 kernel	Buffalo CAT-6 Flat Network Cable
Intel Centrino Wireless-N 1030 802.11 ?? a) b) g) n) Realtek PCIe SE Family Controller Ethernet ? Fast Ethernet ? Gigabit Ethernet ?	Broadcom 802.11n network adapter		Cable Type: UTP-4 Straight Cable Connector Type: RJ-45 Connector Cable: Twisted ✓

Parameters

Parameters	Default Value
Channel	1
MTU	Auto
Transmit power	70 mW
LAN cable	CAT6

Data rate ?
RTS Threshold ?
Distance ?

Experiment 1 – Measuring throughput with Iperf

In this experiment, we are focusing on the throughput of the bandwidth and find the maximum possible throughput of the bandwidth by increasingly the bandwidth packet to the server one-by-one and use the data that feedback from the server to plot the graph.

What iperf commands did you use?

Result 1: Throughput in wireless network

Put the table in Appendix.

Bandwidth(Mbits/sec)	Throughput(Mbits/sec)	Packet loss(%)
1	0.998	0.12
2	2	0.059
3	3	0.039
4	3.99	0.059
5	5	0.024
6	5.99	0.02
7	6.99	0.017
8	8.01	0.029
9	8.99	0
10	9.99	0.012
11	11	0
12	12	0.17
13	13	0
14	13.8	0.47
15	14.9	0.45
16	15.7	1.5
17	16.5	3.2
18	17.3	3.6
19	18.2	4.1
20	18.4	7.7
21	17.2	5.6
22	19.2	12
23	17.6	23
24	19.8	17
25	19.1	23
26	20	23
27	19.9	26
28	19.9	28
29	19.4	33
30	19.9	33
31	19.1	38
32	20.1	37
33	19.4	41
34	19.4	43
35	19.8	43
36	20.5	43
37	20.3	45
38	20.6	46
39	20.4	48
40	20.8	48
41	20.7	50
42	20.9	49
43	21.2	51
44	21	52

45	21.4	52
46	19.6	57
47	19.7	58
48	19.8	59
49	19.9	59
50	19.7	60
51	21.1	58
52	21.2	59
53	22.2	58
54	21.7	60

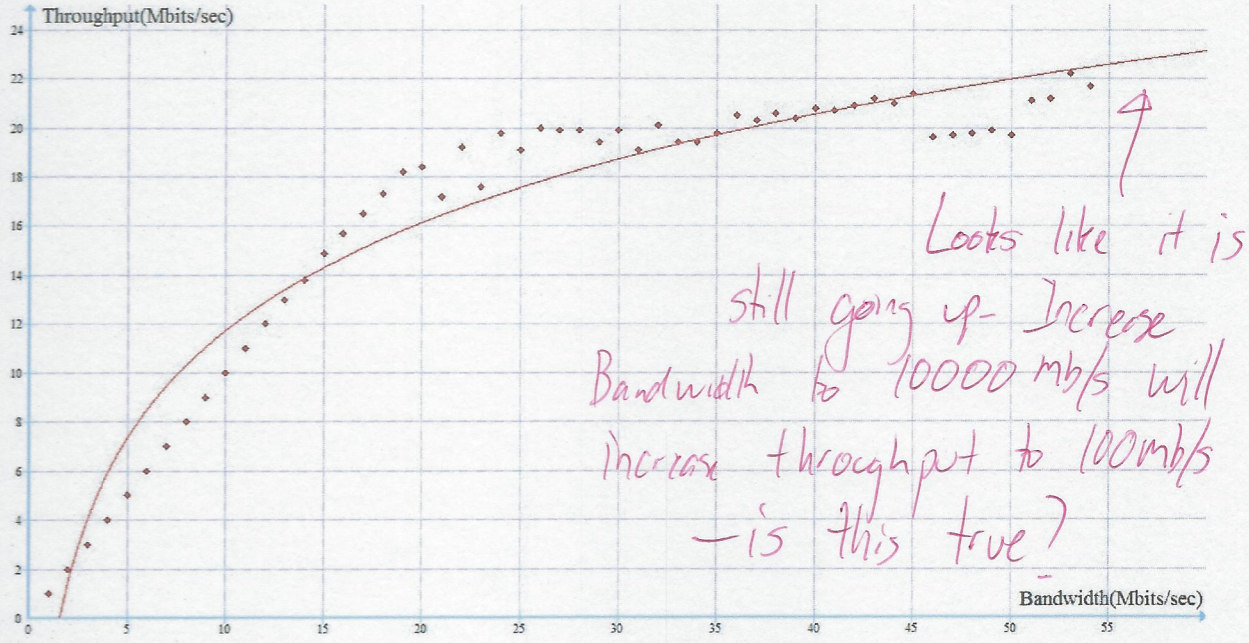


Figure3: Graph of the throughput of wireless transmission Good.

Result 2: Throughput in wired network

Bandwidth(Mbits/sec)	Throughput(Mbits/sec)	Packet loss(%)
1	1	0
2	2	0
3	3	0
4	4	0
5	5	0
6	6	0
7	7	0.017
8	8	0
9	9	0
10	10	0
11	11	0
12	12	0
13	13	0
14	14	0
15	15	0
16	16	0
17	17	0.0069
18	18	0
19	19	0.031
20	20	0.029
21	21	0
22	22	0
23	23	0
24	24	0
25	25	0
26	26	0
27	27	0
28	28	0
29	29	0
30	30	0
31	31	0
32	32	0
33	33	0
34	34.1	0.045
35	35	0.04
36	36.1	0.02
37	37.1	0.016
38	38	0.028
39	39.1	0.012
40	39.9	0.024
41	41.1	0

42	42	0.017
43	43.1	0.025
44	44	0.013
45	45	0.039
46	46.1	0
47	47	0
48	48	0
49	49.2	0
50	50	0.0094
51	51.1	0.014
52	52	0.032
53	53.2	0.011
54	54.2	0.028
55	55.2	0
56	56	0
57	57.1	0
58	58.2	0
59	59.1	0.002
60	60	0.018
61	61.2	0.0038
62	62.2	0.031
63	63.2	0.0056
64	64.3	0.02
65	65.3	0.0036
66	66.1	0.023
67	67.2	0.016
68	68.4	0.024
69	69.2	0
70	69.9	0.0084
71	71.2	0.0018
72	72	0.039
73	72.9	0.031
74	74.3	0
75	75.3	0.0062
76	76.3	0.032
77	77.2	0.014
78	78.3	0.035
79	79.3	0.016
80	79.9	0.0088
81	81	0
82	82	0.0057
83	83.3	0
84	83.9	0.0028
85	84.9	0.019
86	86.3	0.029

Summary

As we can see from the result1 and the result2 above, result1 show the throughput that use a wireless network and we can see that the throughput is start to stop increasing when the throughput reach a maximum possible throughput as we can see from the table of result1 that when the throughput reach at 19Mbits/sec the throughput is start to stop increasing and the percent of packet loss is start increasing gradually even as we increase the bandwidth it is shown that many more packet will loss and it will cause the inefficiency of the network , but if we looking at the table of the result2 that use a wired network and it's means the transmission of data through the LAN cable can get much more possible throughput rate as we look from the result2 table the throughput can reach until 98 Mbits/sec and cause a little bit packet loss and it's will be the same as result1 that when it's reach the maximum throughput it will start to stop increasing the throughput. After they reached the maximum throughput it might be because of wired and wireless interface that impact on the throughput performance.

Thats a long sentence!

Why! Why doesn't it stop at 25 or 35 or 45 Mb/s?

Why wired better than wireless?