

# ITS 413 Internet Technologies and Applications

---

*Assignment: Phase 2 Report*

By: Group04

Suppachai Suwanwatcharachat (5222781601)

Sonnatas Chaisorn (5222782096)

Rungsemund Chunvichit (5222791683)

Date: 17 February 2012

## Aims

To measure the maximum throughput that can be achieved over a wireless LAN and Ethernet link.

## Network Diagram

### Wireless throughput test



## Equipment Specifications

-2 Computers 

-Compaq laptop

OS: Window 7 - 32bit

Processor: Pentium Dual-Core CPU 2.20GHz

Ram: 1.00 GB

-A Asus laptop

OS: Window 7 - 32bit

Processor: Intel Core 2 Duo CPU 2.4GHz

Ram: 2.00 GB

-Router: LINKSYS

Wireless-G 2.4GHz/54Mbps Broadband router , -Ethernet line

## Parameters

Parameter	Description
iperf -c 192.168.1.198 -u -b 54M	"iperf -c 192.168.1.198" = Set a client at address 192.168.1.198 "-u " = Set UDP "- b " = Set limit of bandwidth "M" = Megabytes
iperf -s -u	"iperf -s" = Set a server that waiting connect from client "-u" = Set to be a UDP

## Experiments and Results

### Experiment 1 - measure the UDP throughput BY WIRELESS LAN

From this experiment we test by create someone to be a server and another one is client and use computer connect to wireless LAN Then, computer that is server will wait for connection with someone from client by add some bandwidth to be a higher value and each value and graph will become like the following table:

Connection by: One computer connect with a LAN of router G04, another one connect directly by Ethernet line

We choose to change Parameter 

to:[10,20,30,40,50,60,70,80,90,91,92,93,94,95,96,97,98,99,100,105,110]

Bandwidth	Throughput	% loss	jitter
10M	10.00	0.0059	2.001
20M	20.00	0.05	0.776
30M	39.80	0.72	0.516
40M	40.00	0.066	0.671
50M	50.00	0.012	0.358
60M	59.80	0.35	0.218
70M	70.00	0.0008	0.241
80M	79.90	0.092	0.214
85M	85.20	0.00069	0.157
90M	90.40	0.092	0.192
91M	91.20	0.00065	0.177
92M	92.60	0.00064	0.188
93M	93.30	0.00063	0.404
94M	94.10	0.00063	0.167
95M	95.50	0.089	0.207
96M	95.60	0.71	0.145
97M	95.60	1.6	0.146
98M	95.70	3.1	0.142
99M	95.50	4	0.916
100M	95.50	5	0.185
105M	95.60	8.9	0.136
110M	95.60	14	0.174

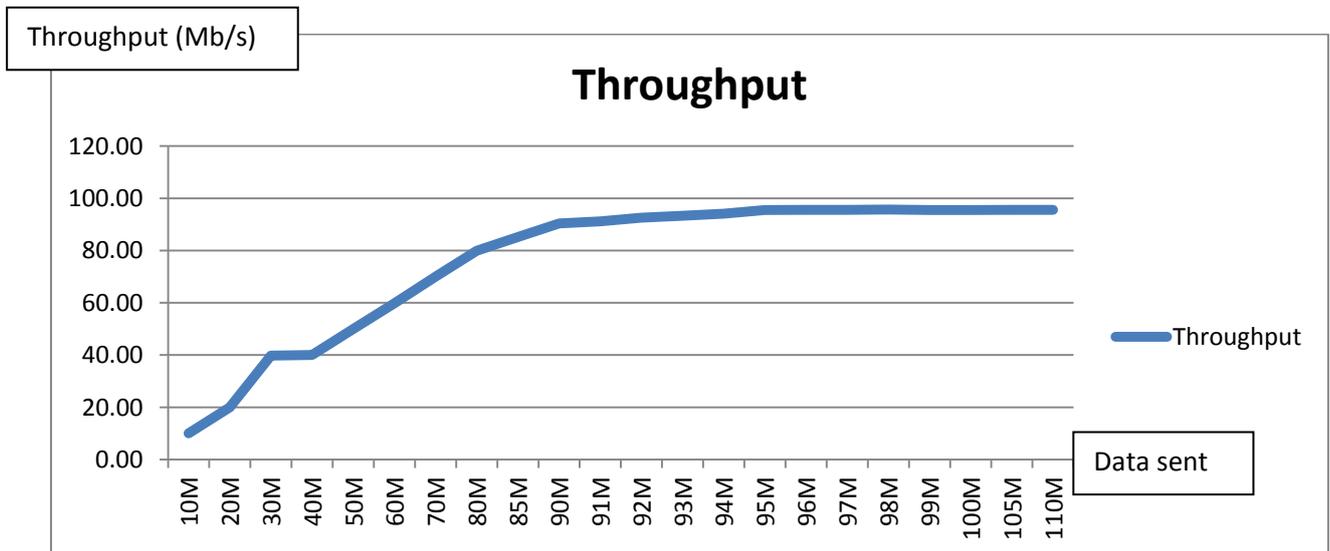


Figure 1 Throughput

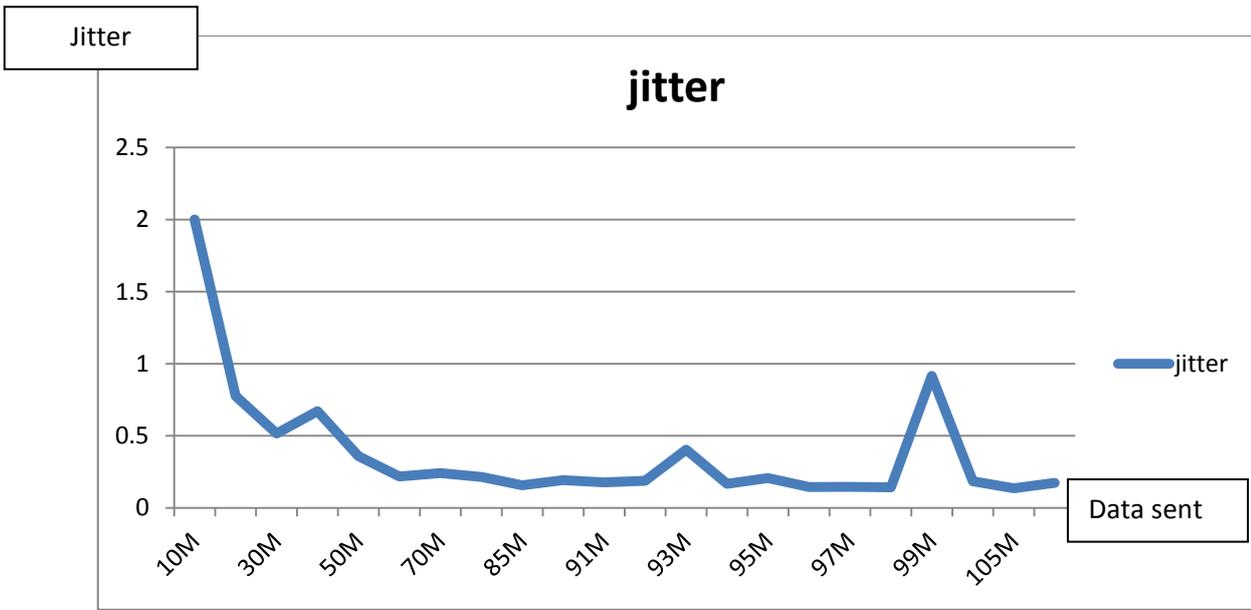


Figure 2 Jitter

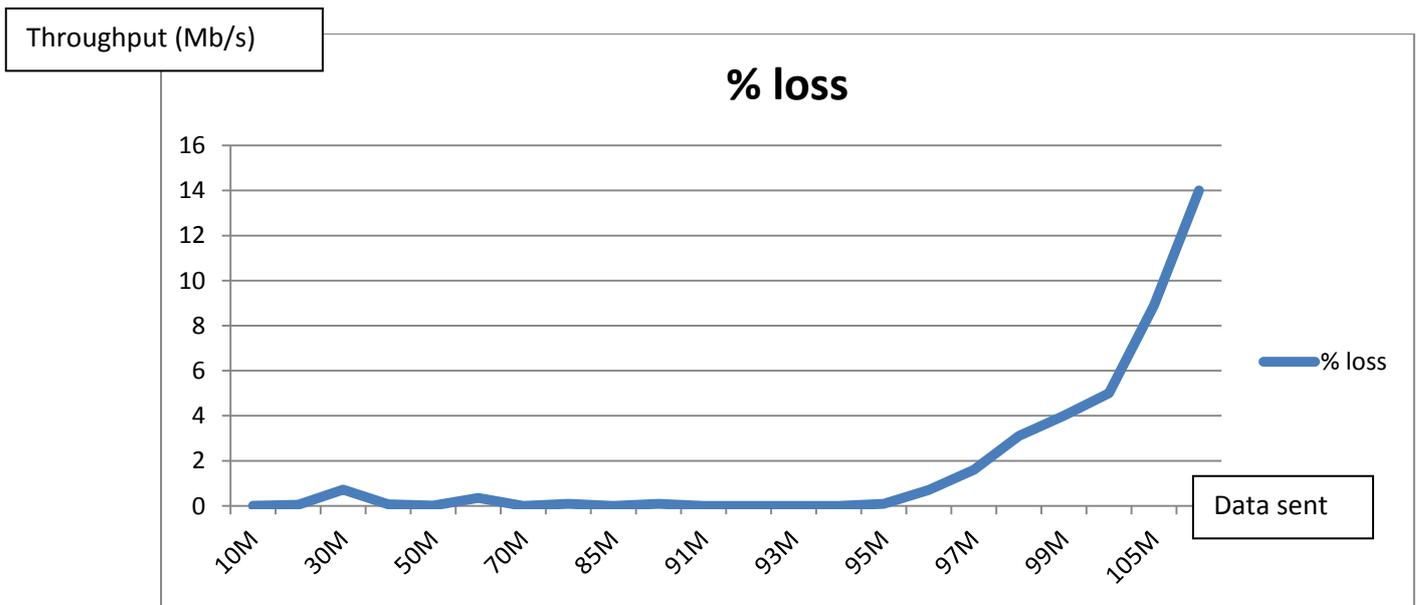


Figure 3 % loss

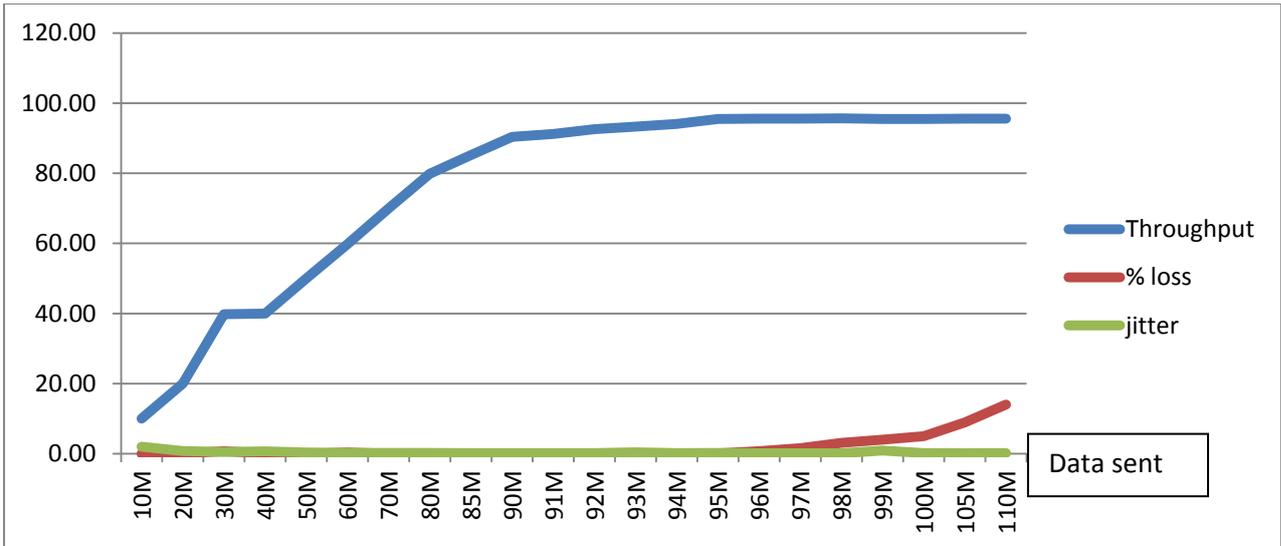


Figure 4 Summary of throughput  loss and jitter

(by LAN)

**Experiment 2 - measure the UDP throughput BY Ethernet**

Connection by: Both computer connect with a LAN of router G04, another one connect directly by Ethernet line

We choose to change Parameter to:[10,20,25,26,27,28,29,30,31,32,33,34,35,40]

Bandwidth	Throughput	% loss	jitter
10M	10.00	0.047	2.066
20M	20.00	0.0029	0.95
25M	24.9	0.47	0.713
26M	25.9	0.77	0.644
27M	26.9	0.5	0.832
28M	27.7	0.54	0.903
29M	28.7	0.78	1.377
30M	29.6	1.2	0.669
31M	31	0.52	0.438
32M	31.4	1.7	1.259
33M	31.4	5	0.409
34M	29.7	11	0.491
35M	30.4	13	1.008
40M	30.8	23	0.771

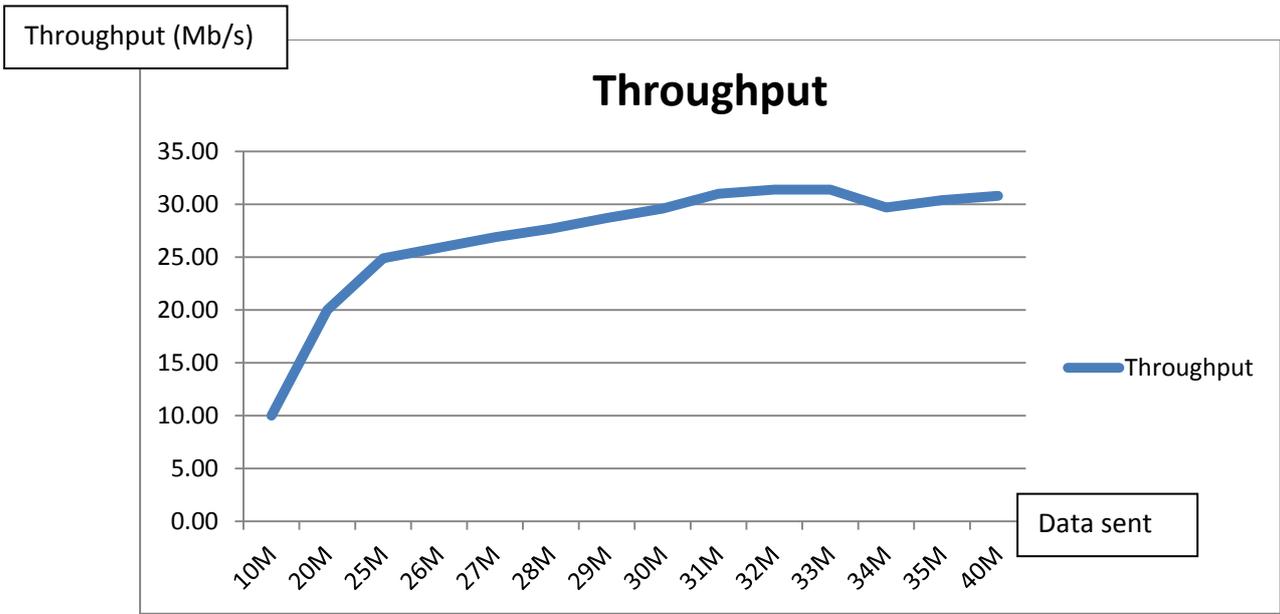


Figure 1: Throughput

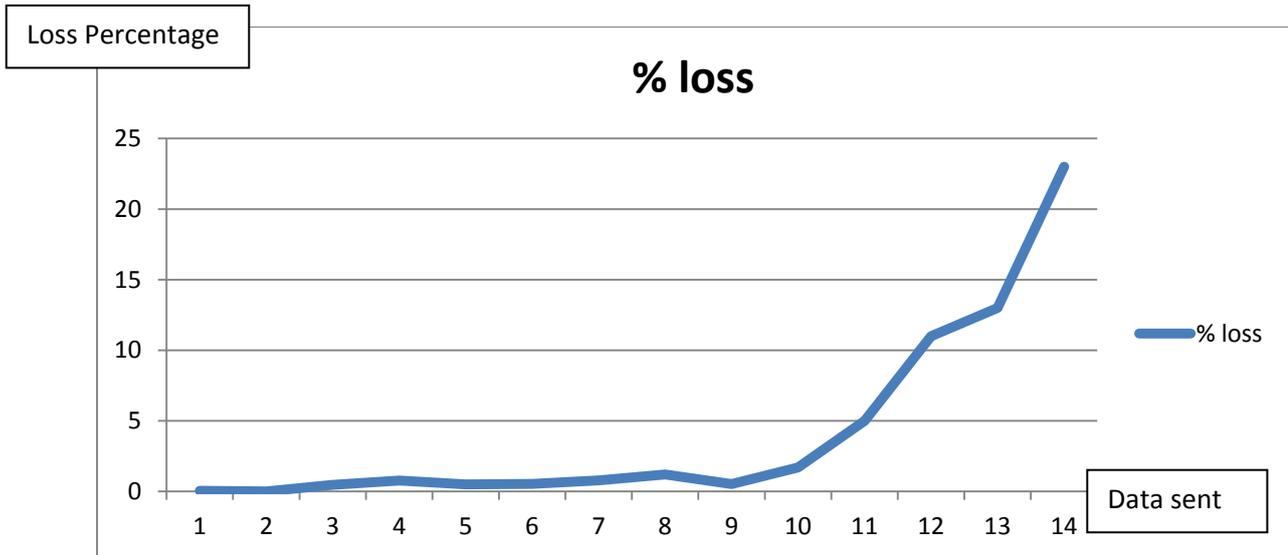


Figure 2: % loss

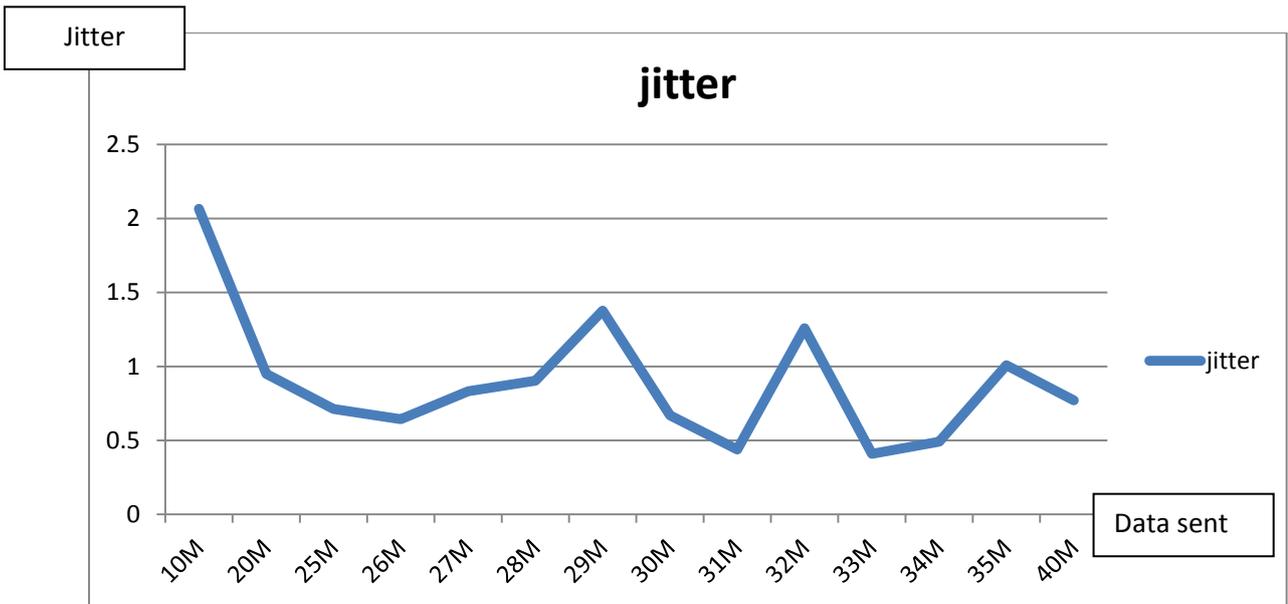


Figure 3: Jitter

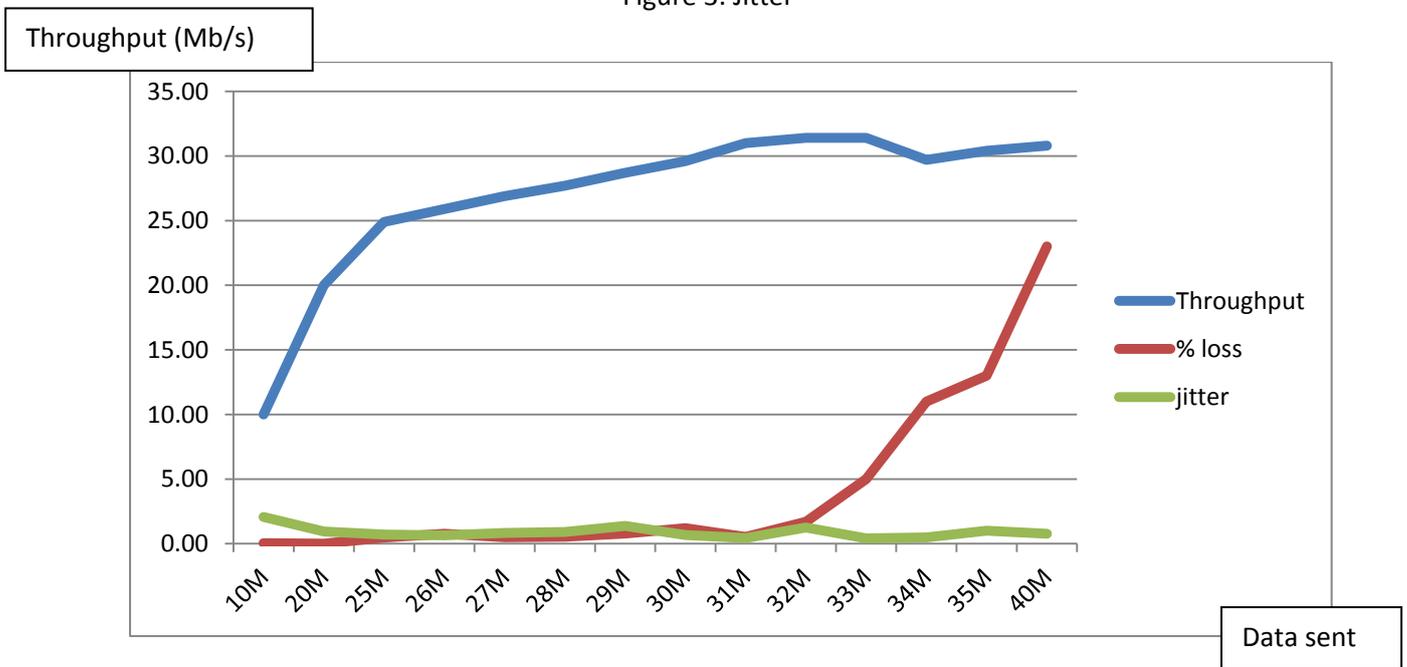


Figure 4: Summary of throughput jitter and % loss

(By Ethernet)

Conclusion: Throughput for Wireless Lan is 31 Mb/s.

Throughput for Ethernet is 95 Mb/s. 

Percentage of loss will increase as it approach maximum throughput. 