

Network Administration

Reference:

(1)http://opencourse.ndhu.edu.tw/pluginfile.php/852/mod_resource/content/0/course_files/Chap10.pdf

(2)<http://superuser.com/questions/264171/collisions-in-csma-cd-ethernet>

(3)<http://www.techbang.com/posts/15880-4-introduction-to-network-architecture-networks-underlying-frame-relay-rule?page=2>

1.

現在的網路線路從原本的bus network換成是star topology。另外，hub也大多改成是使用switch，封包會被傳送至switch上特定的一個port而不是進行broadcast。再加上如果是full duplex，意味著可以同時接收和發送封包，也就不會有collision的問題

2.

Reference:

(1)<http://www.techbang.com/posts/15880-4-introduction-to-network-architecture-networks-underlying-frame-relay-rule?page=3>

(2)https://en.wikipedia.org/wiki/Exposed_node_problem

a)

hidden terminal problem:無限訊號有距離與遮蔽物上的限制，假設兩個裝置都可以連接到access point，但是因為上述因素無法察覺對方的存在，對於collision detection就有其難度

exposed terminal problem:一個裝置在傳輸資料的時候，會導致其他在其訊號覆蓋範圍內的裝置因為carrier sensing的緣故，無法進行傳輸，就算source and destination完全不同

b)裝置傳送資料之前先傳一個request，由基地台回傳CTS決定誰可以進行傳輸，就可以解決hidden terminal problem。同時，如果旁邊的裝置接收到了RTS卻沒有接收到相對應的CTS就可以知道自身是exposed node，傳輸就可以不受到干擾。

3.

discuss with 顏毓均

Installation:

```
test@test-VirtualBox: ~
b03902001@linux10:~$ wget http://jaist.dl.sourceforge.net/project/iperf/iperf-2.0.5.tar.gz
--2016-03-11 13:16:32-- http://jaist.dl.sourceforge.net/project/iperf/iperf-2.0.5.tar.gz
正在查找主機 jaist.dl.sourceforge.net (jaist.dl.sourceforge.net)... 150.65.7.130
正在連接 jaist.dl.sourceforge.net (jaist.dl.sourceforge.net)|150.65.7.130|:80... 連上了。
已送出 HTTP 要求，正在等候回應... 200 OK
長度: 248583 (243K) [application/x-gzip]
Saving to: 'iperf-2.0.5.tar.gz'

iperf-2.0.5.tar.gz      100%[=====] 242.76K  1.31MB/s   in 0.2s
2016-03-11 13:16:33 (1.31 MB/s) - 'iperf-2.0.5.tar.gz' saved [248583/248583]

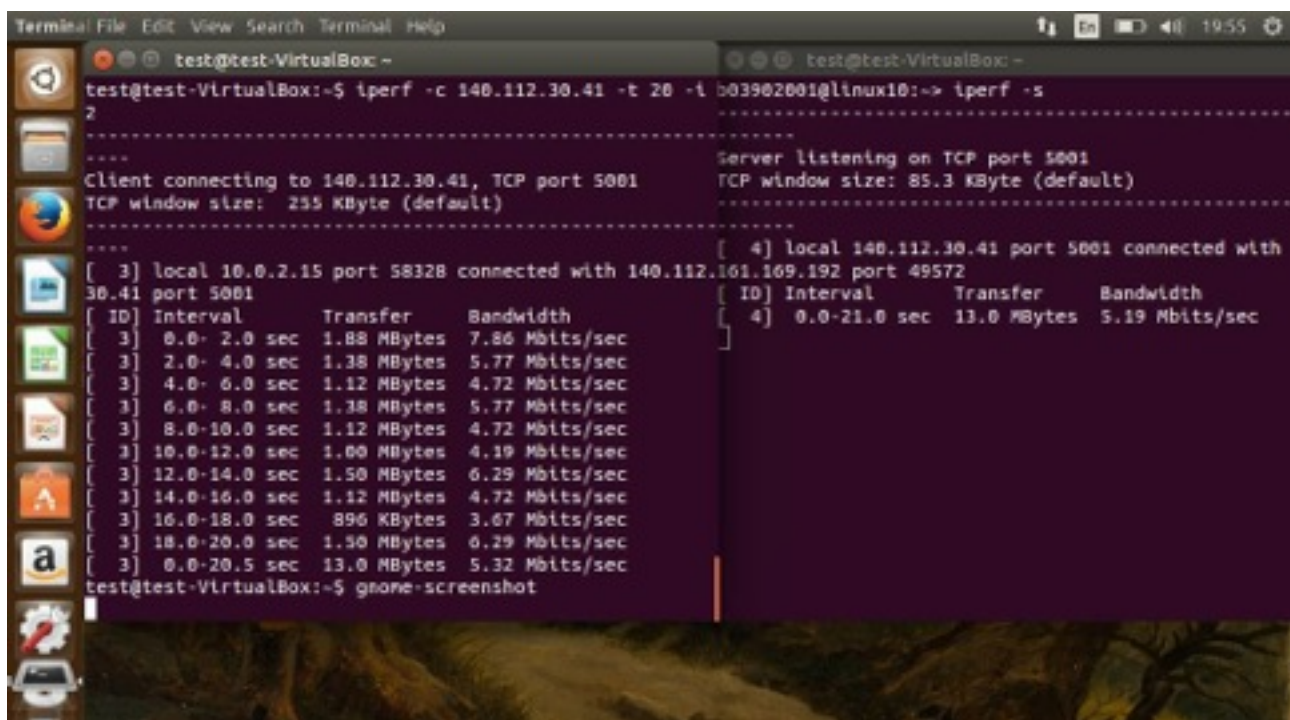
b03902001@linux10:~$
```

```
test@test-VirtualBox: ~  
b03902001@linux10:~/iperf-2.0.5> ./configure --prefix=$HOME
```

```
test@test-VirtualBox: ~  
b03902001@linux10:~> ls  
ADA/ DSA/ htdocs/ iperf-2.0.5.tar.gz nyscript/ NASA/ system_programming/ TerminalGame/  
b03902001@linux10:~> tar -zxvf iperf-2.0.5.tar.gz
```

```
test@test-VirtualBox: ~  
b03902001@linux10:~/iperf-2.0.5> make ; make install
```

Testing Result:
network: Wired Ethernet (hinet 20M/5M)



The screenshot shows a terminal window with two iperf sessions. The left session is a client connecting to 140.112.30.41 on port 5001. The right session is a server listening on port 5001. Both sessions show a series of 2-second intervals with transfer and bandwidth data.

ID	Interval	Transfer	Bandwidth
3	0.0-2.0 sec	1.88 MBytes	7.86 Mbits/sec
3	2.0-4.0 sec	1.38 MBytes	5.77 Mbits/sec
3	4.0-6.0 sec	1.12 MBytes	4.72 Mbits/sec
3	6.0-8.0 sec	1.38 MBytes	5.77 Mbits/sec
3	8.0-10.0 sec	1.12 MBytes	4.72 Mbits/sec
3	10.0-12.0 sec	1.00 MBytes	4.19 Mbits/sec
3	12.0-14.0 sec	1.50 MBytes	6.29 Mbits/sec
3	14.0-16.0 sec	1.12 MBytes	4.72 Mbits/sec
3	16.0-18.0 sec	896 KBytes	3.67 Mbits/sec
3	18.0-20.0 sec	1.30 MBytes	6.29 Mbits/sec
3	0.0-20.5 sec	13.0 MBytes	5.32 Mbits/sec