

Nomadic Communications Labs



Alessandro Villani
avillani@science.unitn.it



**Other Tools
for the performances
evaluation of a network**

Tools overview

- During our test we used IPERF: a very simple tools for the performance evaluation
- We had some problems with the data reported by IPERF and from time to time the tools stop to work

Tools overview

- There are many other tools for the throughput measurement:
 - D-ITG
 - Netperf
 - Rude&crude
- We will use D-ITG and netperf



D-ITG

D-ITG

- D-ITG (Distributed Internet Traffic Generator) is downloadable from:
 - <http://www.grid.unina.it/software/ITG/>
- We will use the last stable version V:2.6.1d
- The manual is available at the address:
 - <http://www.grid.unina.it/software/ITG/codice/D-ITG2.6.1d-manual.pdf>

D-ITG

- D-ITG is composed by a number of different tools. The most important three are:
 - ITGSend: the sender
 - ITGRecv: the receiver
 - ITGDec: the log decoder

D-ITG

- ❑ To run D-ITG, we have to start the tool on the server side in receiving mode:
 - `user@server:~> ITGRecv`
- ❑ The default port is 8999
- ❑ Optionally you can specify the protocol (UDP or TCP). The default is UDP

D-ITG

- ITGSend is the tool to use to generate the flows of traffic
- It has a lot of options:
 - We can generate the packets with different payload
 - We can generate the packets with different inter-departure time
 - We can generate packets using different protocols (TCP, UDP, DNS, Telnet, VoIP, ...)

D-ITG

□ A basic example is the following:

- `user@server:~> ITGSend -a 192.168.10.30 -C 200 -c 1400 -t 30000 -x remote.log -l local.log`

■ In this example:

- Connect with the server 192.168.10.30 (-a flag)
- The packets are generate at a constant rate of 200 Packets per Second (-C)
- The Packet have 1400 byte constant payload (-c)
- Generate 30 Seconds of traffic (-t)
- Save the log locally in the file local.log (-l) and on the remote server in the file remote.log (-x)

D-ITG

- ❑ ITGDec is the utility to decode and analyze the log
- ❑ N.B.: to obtain coherent results, the clock of the sender and of the receiver must be synchronized (NTP is the simpler solution)

D-ITG

□ In our simple case we have:

- `user@server:~> ITGDec remote.log`

□ The result is something like:

```
\-----  
Flow number: 1  
From 192.168.10.110:32769  
To    192.168.10.30:8999  
-----  
Total time           =      19.998916 s  
Total packets        =           3830  
Minimum delay        =      0.027108 s  
Maximum delay        =      0.088890 s  
Average delay        =      0.030711 s  
Average jitter       =      0.001759 s  
Delay standard deviation =      0.007118 s  
Bytes received       =      5362000  
Average bitrate      =    2144.916254 Kbit/s  
Average packet rate  =      191.510380 pkt/s  
Packets dropped      =           110 (2.79 %)  
-----
```



Netperf

Netperf

- Netperf is a benchmark tool, useful to measure the network performance
- The software is available at the address:
 - <ftp://ftp.netperf.org/netperf/>
- The main site for netperf is:
 - <http://www.netperf.org/netperf/>
- There is also a complete manual of the tools:
 - <http://www.netperf.org/netperf/training/Netperf.html>

Netperf

- ❑ To run netperf, we have to start the netserv tool on the server side :
 - `user@server:~> netserv`
- ❑ The default port is 12865
- ❑ You don't have to specify the protocol

Netperf

- netperf is the tool to use to measure the performance of the network
- It has a many different options:
 - We can measure the performance of the network evaluating different type of traffic
 - The two most interesting type of traffics for our intent are
 - TCP stream (the default)
 - UDP stream

Netperf

- A basic example is the following:

- `user@server:~> netperf -l 20 -H 192.168.10.30 -t UDP_STREAM -fb`

- In this example:

- The test will last for 20 Seconds (-l)
- Connect with the server 192.168.10.30 (-H)
- The type of traffic to evaluate is UDP (-t)
- The output format is in KByte/sec (-f)

Netperf

- In our simple example the result we obtain is something like:

Socket Size bytes	Message Size bytes	Elapsed Time secs	Messages		Throughput KBytes/sec
			Okay #	Errors #	
109568	65507	20.01	261	0	834.53
109568		20.01	80		255.80

- The interesting line is the last, where we have the performance from the point of view of the receiver with a measured throughput of 255.80 KB/sec



The Report

Performance: possible task 1

- ❑ Fix the speed of the NIC card and of the AP and run a set of test using D-ITG
- ❑ Please note: JUST a single speed is required (i.e. as example: play with 11Mbps rate only)
- ❑ Complete all the analysis you already did for the first report (practical throughput only!)

Performance: possible task 2

- ❑ Fix the speed of the NIC card and of the AP and run a set of test using netperf
- ❑ Please note: JUST a single speed is required (i.e. as example: play with 11Mbps rate only)
- ❑ Complete all the analysis you already did for the first report (practical throughput only!)