Nomadic Communications Labs

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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   Message  Elapsed   Messages
Size     Size     Time      Okay Errors   Throughput
bytes    bytes    secs        #      #    KBytes/sec

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 11Mbs 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 11Mbs rate only)
- Complete all the analysis you already did for the first report (practical throughput only!)