D-ITG 2.8

D-ITG is a platform capable to produce traffic at packet level accurately replicating appropriate stochastic processes for both IDT (Inter Departure Time) and PS (Packet Size) random variables (exponential, uniform, cauchy, normal, pareto, ...).

D-ITG supports both IPv4 and IPv6 traffic generation and it is capable to generate traffic at network, transport, and application layer.

For a detailed and up-to-date documentation please refer to the official website: http://www.grid.unina.it/software/ITG/documentation.php

Instructions for Installing D-ITG 2.8

1. Download the package form the website: http://www.grid.unina.it/software/ITG/codice/D-ITG-2.8.0-rc1.tgz
2. Copy it in you home and extract it
3. Open a terminal, go to the /src folder within the DITG folder and type the command make
$ make
4. If there is any problem with the installation you may have to download the g++ package first and then try to install again
$ sudo apt-get install g++

Installing the GUI for DITG-2.8

1. Download the GUI from: http://www.semken.com/downloads/download.php?get=itggui-092.zip
2. Copy it in the DITG folder and extract it.
3. Go to the newly created itggui-092 and open the the software with the following option:
java -jar ITGGUI.jar &
4. If there is any problem it is because Java is not installed in your system.
sudo apt-get update
sudo apt-get install sun-java6-jdk sun-java6-plugin

Working with the GUI

1. Previous steps:

Create a folder called logs in the D-ITG-2.8.0-rc1 folder called logs
Create a folder called results in the D-ITG-2.8.0-rc1 folder called logs
Go to "Settings" and
- Change the default "Binary Directory", for the current one you are using: `~/D-ITG-2.8.0-rc1/bin`.
- Change the default "Logging Directory" for the newly created one: `~/D-ITG-2.8.0-rc1/logs`
Go to the folder ITGPlot within the folder src of the D-ITG directory and give execution permission to the ITGplot tool:
```
$ sudo chmod +x ITGplot
```

2 .Setting up the Receiver

1. Set up the Receiver

Go to Settings and in the "Local Receiver Options" submenu set the Logging Type as local and write the Logging File name that you consider appropriate (you may not want to Overwrite files, so change the names accordingly).

2a. (Optional) Start the Remote Logger

In some cases you may want to start also the Logger. To do so, click on the Logger button (before clicking on the Receiver one)

2b. Start the Receiver

Click on the Receiver button to start the Receiver.

3. Setting up the Sender

1a. Define Flow (Individually)

Go to "Define Flow" and set the parameters for the flow you want to generate. Important things to consider:

The "Target Host"

The packet/sec rate and the size of the packets. In the Estimated Traffic box (on the right bottom corner) you see, what the number introduced translate into traffic rate at the IP layer.

When more than one flow is generated the ports may need to be changed

When testing QoS the TOS/DS byte needs to be changed

1b. Define Flow (multiflow)

In case you want to define different flows use the Multi-Flow section instead and click on edit for configuring each flow. The same things to consider as above also apply.

2a. (Optional) Set up the Remote Logger

In some cases you may want to the Logger server. To do so go to Settings and in the "Local Receiver Options" submenu set the Logging Type as Server and enter the IP of the Receiver in the Logging Server box. Then, write the Logging File with the name that you consider appropriate (you may not want to Overwrite files, so change the names accordingly). When the process is finished this file is going to appear in the bin folfer of the D-ITG directory.

2b. Start the Sender

Click on the Sender button to start the sender

4. Steps to be taken after traffic generation (analyzing and plotting)

1a. Stop the Receiver, by locating its process in Linux and killing it:
```
$ ps -aux | grep ITGRecv
$ sudo kill [number_in_the_second_column]
```
1b. (Optional) Stop the Remote Logger.

If the Remote Logger has been used, kill it after killing the Receiver:
```
$ ps -aux | grep ITGLog
$ sudo kill [number_in_the_second_column]
```
1c. In case of problems ...

If the above does not work, restart the GUI, it takes nothing...

2a. Process the log with the Analyzer tool.

Select in the Input File menu the name of the log to be analysed

Select the Output dir for the results to be placed.

Select the Plot files and click into the "Run Analyzer" button. (It is better if you modify the default 1 millisecond Interval, since in that case the plots will have too much granularity, values bigger than 100 ms works good for most of the tests done)

Note: If the Analyzer does not end after 15 seconds, click on it again and restart the GUI.

If any problem occurs regarding "Octave" you have to install it in your machine.

```
# apt-get install octave
```

2b. Process the results manually from the command line

Go to the binary directory within the D-ITG folder and run

```
$ ./ITGDec [log_name] -b 500 -d 500 -p 500 -j 500
```

It allows more flexibility than the GUI, the numbers are the millisecond of granularity that we want to provide to each file: b for bitrate, d for delay, p for pacekt loss and j for jitter)

3. Plot the results

It the GUI was used check whether new files bitrate.txt, delay.txt, packetloss.txt and jitter.txt have appeared in the output dir. If not they are in the folder where the GUI is located. In case you analyzed the results manually, check for the files in the bin directory.

Move them to the ITGPlot folder and create the plots:

```
$ ./ITGplot bitrate.txt delay.txt packetloss.txt jitter.txt
```

Observe that new .eps figures of the same name have appreared. Move them to a folder of your convinience)you do not want to overwrite them).

Results of multiple flows show the aggregate which may result confusing, if you just want to plot the flows use the option (where X stands for the last flow that wants to be plotted):

```
$ ./ITGplot bitrate.txt delay.txt packetloss.txt jitter.txt 1:X
```

Additional notes

This document is a very introductory guide to the potential of the D-ITG. For a more detailed information regarding all the options available with each of the programs, have a look at the guide in: http://www.grid.unina.it/software/ITG/codice/D-ITG-2.7.0-Beta2-manual.pdf

Most of the workaround regarding the placement of files and tools will be sorted out in the new version of the GUI, stay tuned.