D-ITG :: DISTRIBUTED INTERNET TRAFFIC GENERATOR
www.grid.unina.it/software/ITG

Distributed Internet Traffic Generator (D-ITG) is a platform capable to produce IPv4/IPv6 traffic (network, transport and application layer) accurately replicating appropriate stochastic processes for both IDT (Inter Departure Time) and PS (Packet Size) random variables.

Protocols supported by D-ITG are: TCP, UDP, and ICMP. Moreover, it is capable to replicate statistical properties of traffic as it is generated at the application layer (e.g Telnet, VoIP - G.711, G.723, G.729, Voice Activity Detection, Compressed RTP – DNS). It is also possible to set the TOS (DS) and TTL IP header fields.

The statistical distributions provided for IDT and PS stochastic processes are Constant, Uniform, Exponential, Pareto, Cauchy, Normal, Poisson, and Gamma. D-ITG allows to repeat identical experiments over different scenarios by using the same random numbers generation seed.

One-way-delay (OWD), round-trip-time (RTT), packet loss rate, jitter, and throughput can be measured and analysed using the various components of the D-ITG platform: (i) sender; (ii) receiver; (iii) decoder; (iv) log server.

Another innovative feature of D-ITG is the possibility to locally store information both on receiver and sender, or to delegate the logging process to a remote log server. This option is useful when the receiver has limited storage capacity - e.g. PDAs, Palmtops, etc. – and when log information must be analysed “on-the-fly”, for example, when the sender is asked to adapt the transmission rate based on channel congestion and receiver capacity.

The communication between sender and receiver is specified by a protocol for the configuration of the experiment (Traffic Specification Protocol), and happens over a separate signaling channel. Furthermore, the sender can be remotely controlled by using the D-ITG API. This means that the D-ITG sender can run in daemon mode waiting for commands. By using this feature it is possible to test traffic engineering algorithms in a real network.

D-ITG is able to reach high (receiver and sender) data rates. More precisely, with two Linux boxes connected with a Gb Ethernet the maximum achieved data rate is 612 Mbps.

A multithread implementation of D-ITG is currently available for Linux, Windows and Linux Familiar platforms.

D-ITG is currently downloadable and freely available at www.grid.unina.it/software/ITG