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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**