Testing and Validating Tests for Reproducible Experiments

MoonGen is an experiment generator developed at the Chair of Network Architecture and Network Services at the Technical University of Munich, Faculty of Informatics. MoonGen is designed to be independent of the underlying network hardware and software versions. Some features of MoonGen, such as specific latency measurements, require explicit support through the used network card. To ensure reproducible experiments, it is important that experiments are reproducible. MoonGen must be as flexible as possible (R3). For example, both the X540 and 82599 chips support 128 receive and transmit queues. DPDK features multiple receive and transmit queues, which is important for the design of low-level packet processing tools. However, MoonGen must be as flexible as possible (R3). Thereby, for each NIC supported by MoonGen, multiple receive and transmit queues are important aspects of networking hardware that are important for the design of high-speed packet generation tasks (R2).

The MoonGen API provides utility functions required by a packet generator, such as configurable filters (e.g., Intel Flow Director) or hashing functions. The current code base is written in Lua, with the remainder written in C, and about 80% of the current code base uses hardware timestamping and rate control. This allows us to use hardware features like timestamping and rate control in hardware. This allows us to use the underlying hardware features like timestamping and rate control. About 80% of the current code base can explicitly be assigned to a single CPU core in a multi-core packet generation environment.

MoonGen does not run on arbitrary commodity hardware. For example, the smallest bu er size in the order of hundreds of kilobytes is supported. For example, the smallest bu er size is supported in the range of "a couple of microseconds" and can be used independently from each other. 10 GbE NICs support 128 receive and transmit queues. For example, both the X540 and 82599 chips support 128 receive and transmit queues.


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