

# PACKET GENERATOR

A packet generator is basically a software that generates random packets or allows the user to construct customized packets. It uses raw sockets, NDIS function calls or direct access to network adapter. It is use for testing implementation IP stacks for bugs and vulnerabilities.

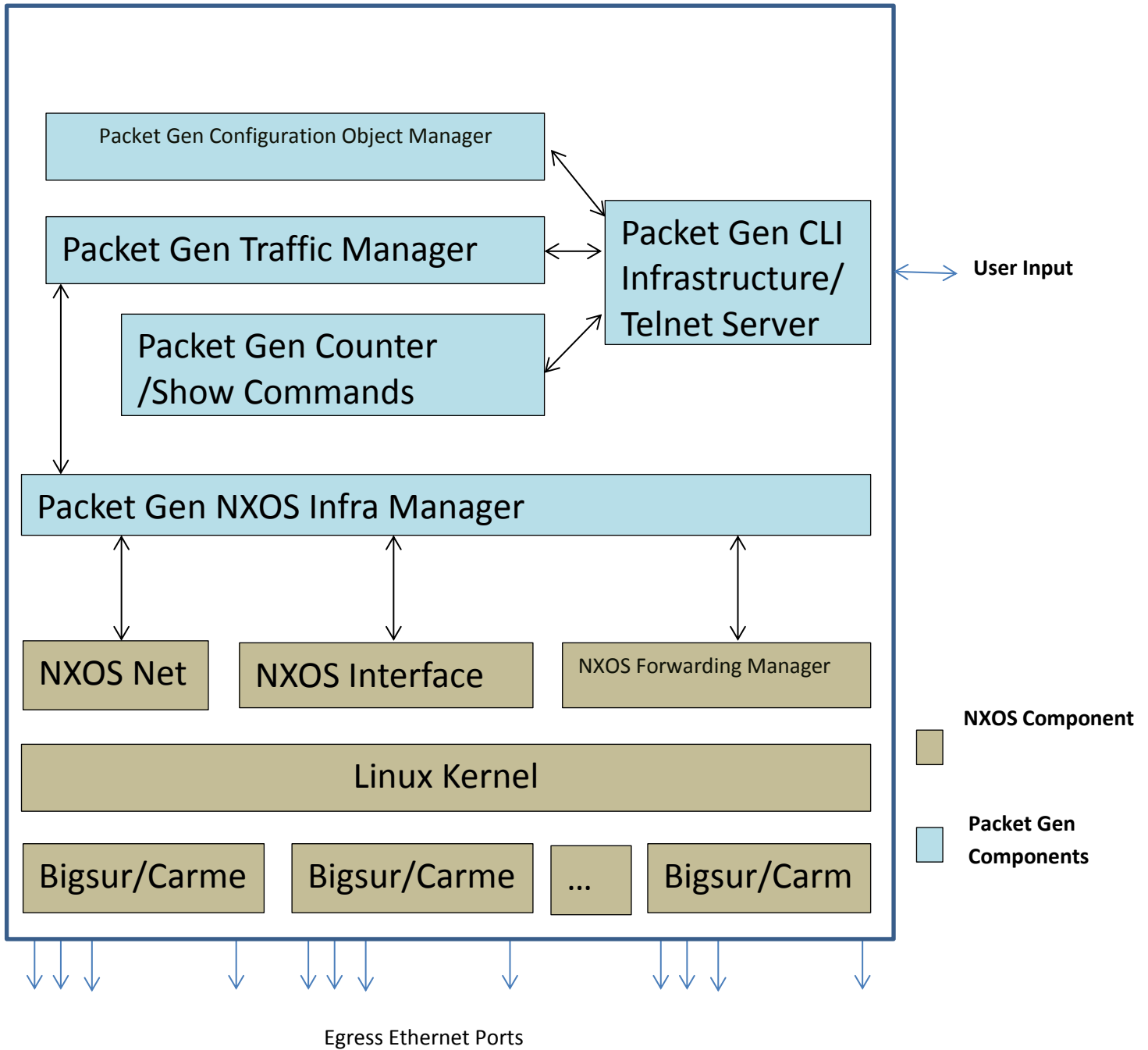
- There are hardware traffic generators like IXIA, SPIRENT. But they are very expensive.
- Limited Traffic generator ports in lab development environment.
- Productivity Loss due to wait times for setups with required number of traffic generator ports.
- Unable to replicate QA setups with multiple traffic entry points.
- Line rate traffic is not a requirement most of the times.

So there is a need for inexpensive traffic generation and one such solution is to implement is through software using a switch. The program runs on switch and switch behaves as a packet generator.

The data is encapsulated with headers of the respective layers i.e. the transport layer headers which may include a UDP header for a UDP packet and a TCP header for a TCP packet. It further contains IP headers (IPv4 or IPv6). All these headers are standardized and the formats have to be followed. At the switch level there is a header called “flow header” which is the header that a switch can understand and it is platform specific i.e. different types of switches have different flow headers. The packets are sent to a particular interface with the help of switches.

To implement a packet generator all these headers have to be defined and also the nsh headers for the switches. The headers ports and interfaces have to be configured. All this can be done with the help of cli. A raw socket has to be created through which the packets are sent to the port. This is not an ordinary raw socket but this is a platform oriented raw socket (the raw socket is modified a bit). Threads are appropriately created and it performs its task.

## Packet Generator Architecture –



## Packet Generator topology –

