



TRAFFIC GENERATION AT 100G

Napatech SmartNICs now offer support for TRex up to 100G line rate for any packet size. This enables organizations to reimagine their infrastructures and achieve hyper-scale performance and cost savings by replacing expensive, proprietary traffic generators with economically sustainable test solutions based on open and standard computing platforms.

Problem

To network equipment manufacturers, operators and owners, testing and validating network performance is of utmost importance. And with the advent of cloud computing and IoT, this need is only growing more acute. In order to manage the cumulating density of functionalities and workloads, the industry now demands a testing regime that not only delivers outstanding performance – but also offers better scalability as well as drastic cost improvements.

In the past, the traditional approach to testing network performance has been based on proprietary traffic generators. But while such solutions have indeed proved efficient for a long series of use cases, they either fall short or prove massively cost prohibitive when it comes to complex and realistic traffic generation.

The key testing challenges facing designers of networks and equipment, as identified by the TRex community are:

- Cost: Commercial stateful traffic generators are very expensive
- Scale: Bandwidth does not scale up well with feature complexity
- Standardization: Lack of standardization of traffic patterns and methodologies
- Flexibility: Commercial tools are not sufficiently agile when flexibility and customization are needed

Solution

TRex is an open source traffic generator specifically developed to address and alleviate these shortcomings through an innovative and extendable software implementation. What differentiates TRex is its portability, cost, capacity and flexibility. When running on Napatech SmartNICs, TRex can now generate traffic even at 100G line rate regardless of the packet size. This enables scalability both of bandwidth and feature complexities, thus providing businesses a high-performance and massively cost-efficient alternative to proprietary traffic generators.

TRex in brief

TRex is an open source, low cost, stateful traffic generator fueled by DPDK. It generates L4-7 traffic based on pre-processing and smart replay of real traffic templates. TRex amplifies both client and server side traffic and can scale to 200Gb/sec with one standard server, cf. trex-tgn.cisco.com.

Application

TRex supports stateful as well as stateless traffic generation modes. As such, it can create traffic based on replay of previously captured network traces and thereby recreate a specific scenario. But it also offers capabilities to create synthetic, algorithm-based traffic as useful for stress testing, etc.

Typical use cases

- Creating high scale benchmarks for stateful networking gear, e.g. firewalls, DPI, IPS and load balancers
- Generating high scale DDOS attacks
- Performing high scale, flexible testing for switches
- Performing scale tests for huge numbers of clients/servers for controller based testing
- Performing EDVT and production tests

TRex on Napatech SmartNICs

To ensure optimized and high-performance traffic generation with zero packet loss even at 100G line rate, TRex can be integrated with the Napatech SmartNIC.

Napatech linux driver, installation instructions and source are available at:

github.com/cisco-system-traffic-generator/trex-core.

Napatech helps companies to reimagine their business, by bringing hyper-scale computing benefits to IT organizations of every size. We enhance open and standard virtualized servers to boost innovation and release valuable computing resources that improve services and increase revenue.

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