**vIPSec Characterization using NSB**

There are a variety of efficient IPsec implementation options available, ranging from a pure SW implementation using optimized CPU instructions to the use of hardware for offloading various aspects of IPsec packet processing.

NSB provides full automation to create a test session using Trex traffic generator with configurable parameters such as .. and benchmarks VPP-IPSec as a reference vIPSec VNF.

**Representation of vIPSec topology components in NSB**

- **vIPSec Overview**
- **NSB Test cases for vIPSec**
  - Following test cases are examples of "black box" testing of emulated of real VNF.
    - **Crypto IPSEC**
      - Test run results contain detailed IPSec metrics reported by traffic generator.
      - Documentation on vIPSec test cases can be found below in references.
  - **How to modify the sample vIPSec test case to craft a new test case flavor**
    - Users can create their own test cases based on existing sample tests. Some modifications may require referring to IPSEC documentation for details.
      - For example, user could do some of the following changes:
        - change the crypto device type as HW_cryptodev or SW_cryptodev
        - change the crypto encryption algorithms as aes-gcm or cbc-sha1
        - change the traffic profile details by crafting new traffic profile based on existing examples
        - change the traffic flow duration, overall test run duration, tolerated loss, packet size, number of test tunnels/connections
  - **vIPSec KPI and Metrics visualization in Grafana dashboards**
    - **Network KPIs**
      - Network KPIs are collected from the TRex traffic generator during a test run.
      - One dashboard represents a specific test type, displaying a pre-defined set of attributes and statistics.
      - Besides, some important test scenario settings are displayed. User is able to visualize test results of current or previous test runs by specifying the "run_id" value.
        - **Network Throughput**
- Bandwidth & Rate

- Latency
VNF KPIs
VNF KPIs are collected from the VPP during a test run.
- vIPSec node stats: packet In/Forward/Dropped

References and Documentation links
1. vIPSec test case configuration can be found in NSB Operations document.
2. Documentation on vIPSec test cases can be found in the OPNFV yardstick test documentation page.
3. Grafana Dashboard for vIPSec test can be found in OPNFV yardstick dashboards page.