

Refactoring VPP Make Test Framework

FastData.io – VPP

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Agenda

- Why Refactor VPP Make Test Framework?
- Proposed Solution
- Transition Plan
- New Packet Stream Testcase Development



Why Refactor VPP Make Test Framework?

- Scapy GPLv2 License Issues
 - Optics of having Scapy embedded in test/framework.py
 - Re-licensing patches [0] lack sign-off of all contributors
- Reduce Execution Time
 - Lots of time spent generating the same packet streams [1]
- Improve Test Coverage
- Simplify Test Creation

[0] <https://gerrit.fd.io/r/c/vpp/+33707>
<https://gerrit.fd.io/r/c/vpp/+33727>

[1] <https://gerrit.fd.io/r/c/vpp/+20632> (uses functools.lru_cache to cache scapy generated pkts)
- Reduces the number of scapy calls by ~17,000.
- Reduces the run from 4 min to 3 min.



Proposed Solution: Non-PCAP Tests

A Scapy Free (ASF) Test Framework

- Refactor existing framework to remove Scapy & unused infra
- Run existing Non-PCAP tests under ASF Test Framework



Proposed Solution: Packet Stream Tests

A Packet Stream (APS) Test Framework

- APS Test Execution Engine
- YAML testcase definition schema (TBD)
 - Input & output packet stream signatures
 - vpp startup configuration (vpp cmdline)
 - vpp configuration (Pim Van Pelt's vppcfg)
 - Pass/Fail criteria
- Packet Stream generation application
 - JSON Packet Stream definition
 - Input PCAP file generation & caching
 - Packet Stream signature generation
 - Packet stream filtering for output signature generation
 - Run independently from APS Test Execution Engine



Transition Plan: Conversion

- Refactor 'Make Test' Framework to enable conversion
 - Export vpp_cmdline
 - Export vpp_api_trace file in JSON format
 - Configure deterministic I2 mac address on all pg interfaces
 - Refactor PCAP file naming to be deterministic
 - Conversion script to run all test cases individually and collect conversion data



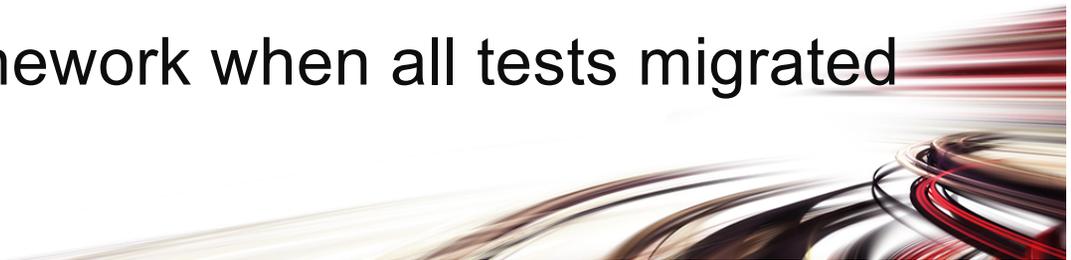
Transition Plan: ASF Framework

- Refactor 'Make Test' framework -> ASF framework
 - Only retain functionality required by set of non-PCAP tests
- Relocate non-PCAP tests ASF framework directory
- Convert relocated tests to use ASF framework



Transition Plan: APS Framework

- Test Execution YAML Schema Definition
- VPP Configuration Format (vppcfg yaml schema)
- Develop APS Test Execution Application
- Develop Packet Stream Generator
- Update conversion script to generate APS testcase definition file skeleton from 'make test' testcase data
- Convert testcases to APS Framework
- Remove existing test framework when all tests migrated



New APS Testcase Development

1. Create Testcase Execution YAML file
2. Modify startup configuration parameters, Pass/Fail criteria, etc.
3. Define VPP configuration sequences via debug cli
4. Import VPP configuration to test configuration files (vppcfg)
5. Create input packet stream definition files
6. Run APS Testcase Engine to create output PCAP files
7. Verify output PCAP files are correct using wireshark, scapy, etc.
8. Convert output PCAP files into packet stream definition files using Packet Stream Generator
9. Update Pass/Fail output signatures



THANK YOU !

