SampleVNF - E Release Update

SampleVNF Project Goal:

This project provides a placeholder for various sample VNF (Virtual Network Function) development which includes example reference architecture and optimization methods related to VNF/Network service for high performance VNFs. The sample VNFs are Open Source approximations* of Telco grade VNF's using optimized VNF + NFVi Infrastructure libraries, with Performance Characterization of Sample† Traffic Flows.

* Not a commercial product. Encourage the community to contribute and close the feature gaps.
† No Vendor/Proprietary Workloads

SampleVNF OPNFV E-Release Goal:

Establishing the sampleVNF repo with list of available VNFs (vACL, UDP_Replay, vCGNAPT, vFW etc) with technical documentation on VNFs and its usage and integrating the VNFs into one of the test project (yardstick) to do performance testing on a given OPNFV platform.

<table>
<thead>
<tr>
<th>ID</th>
<th>Story</th>
<th>Description</th>
<th>Priority</th>
<th>Owner</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New VNFs</td>
<td>Adding new VNFs - Acl, vFW, vCGNAPT, prox etc</td>
<td>High</td>
<td>Deepak/Anand/Bindya</td>
<td>MS5 - completed. All listed VNFs is added</td>
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<tr>
<td>2</td>
<td>Integration into yardstick framework to test the VNFs</td>
<td>Integrating performance test scenarios in yardstick</td>
<td>High</td>
<td>Deepak</td>
<td>MS5 - completed. Patches will be merged to yardstick by MS5</td>
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<tr>
<td>3</td>
<td>VNF catalogue</td>
<td>Adding VNF Catalog to SampleVNF (decision taken in plugfest)</td>
<td>High</td>
<td>Deepak/morgan/Kumar</td>
<td>MS5 - completed. VNF_catalogue moved to sampleVNF • Setting up the webpage in OPNFV lab system is WIP.</td>
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<tr>
<td>4</td>
<td>Documentation for all the VNF</td>
<td>userguide &amp; installation guide for all the VNFs</td>
<td>High</td>
<td>All</td>
<td>MS6 - Basic structure is added. Working on updating documents for all VNFs</td>
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<td>5</td>
<td>VNF blueprint for models project</td>
<td>Develop blueprints for the VNFs in the project</td>
<td>Medium</td>
<td>Deepak</td>
<td>Moved to Next release - This task can be taken up once we have all the VNFs ready and working.</td>
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<tr>
<td>6</td>
<td>Functest integration</td>
<td>Adding SampleVNF part of functest</td>
<td>Medium</td>
<td>Deepak</td>
<td>Moved to Next release - Since we are already integrating the VNF to yardstick. This task will be taken up for next release</td>
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List of VNFs:
Published VNFs in SampleVNF repo:

- vACL VNF - Virtual Access Control List
- vCGNAPT - Virtual Carrier Grade Network Address Translation
- vFW - Virtual Firewall
- vPE - Virtual Provider Edge Router.
- UDP_Replay - reflects all the UDP traffic on the same interface.

Above sample VNF (Virtual Network Function) are optimized to give VNF/Network service for high performance on a given platform.

- Prox - Packet PROcessing eXecution engine.
  - PROX can act as both basic VNF and Traffic generator based on config for NFVi characterization
    - PROXs as Virtual Network Function
      - Basic L2 Forwarding (no touch)
      - L2 Forwarding (change MAC)
      - L3 Forwarding
      - Load balance based on packet fields
      - Symmetric load balancing
      - Routing (vPE basic)
      - mpls
      - basic ACL & nsh aware acl
      - basic cgnaapt & nsh aware cgnaapt
      - BNG - Broadband Network Gateway
      - others like QoS, Policing, ARP, QinQ encap/decap IPv4/IPv6, GRE encap/decap etc
      - Lightweight 4over6

    Based on the config Prox can act as below VNFs

    - PROXs as Traffic generator
      - L2/L3 based UDP traffic generation ipv4/ipv6
      - L4 stateful traffic generation and flow extraction tool
      - Lightweight 4over6 traffic
      - vRouter/BNG traffic generation.

- VNF catalogue
  - An app to list/search for the VNFs available in opensource (in other repositories like github)

    - List Of VNFs
      - In process of setting up the webpage to search/add VNFs into catalogue.

For more information on individual VNFs. Please refer Technical Briefs of VNFs

To be Published VNFs in SampleVNF repo:

- NGIC - next generation infrastructure Core (vEPC) - owner: Deepak
- Noisy VNF - Stres-NG based - Owner: Sridhar (spirent)
- TCP_Reflector – ???

Supported deployment types:

INFO

- SampleVNFs has been validated on different deployment types to enabled both VNF & NFVi characterization on OPNFV platform
  - Baremetal
  - Standalone virtualization (ovs, ovs-dpdk, sriov, vpp)
  - Openstack via heat deployment (ovs, ovs-dpdk, sriov)

How to test the VNFs - yardstick
INFO

- Network Service Testing framework added into the Yardstick will be used as a test tool for Performance verification of all the sample VNFs and do NFVi characterization
  - Test cases supported for VNF - vPE, vFW, vCGNAPT, vACL, UDP_Replay
    - rfc2544
    - latency
    - http_tests
    - VNF scale-up tests
  - Test cases supported for NFVi via PROX
    - Port forward
    - L2/L3 forward with mac modification
    - tag/untag & lb_Stupe testcase
    - basic acl rule testcases
    - bng & bng with QoS testcases.

All the above tests can be run on deployment,

- Baremetal
- Standalone virtualization (ovs-dpdk, sriov)
- Openstack via heat deployment (ovs, ovs-dpdk, sriov)