COLLABORATION WITH OPEN SOURCE
Connection Points Between OpenStack and ETSI NFV TST Working Group

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What is NFV TST WG?

TST is one of several working groups under the ETSI NFV Industry Specification Group (ISG)

• Responsibilities:
  • Testing
  • Proofs of Concept
  • Open Source collaboration
• A productive and collaborative team (albeit being relatively small compared to other working groups)
• Participants include telecom operators, vendors and testing companies
TST Areas of Focus

- Testing the NFV functional blocks: VNF, MANO and NFVI
- Creating NFV Proof of Concept (PoC) and Interoperability guidelines
- Analyzing gaps between open source projects and the ETSI NFV architecture
• Assessing the performance of the NFVI and its ability to fulfil the performance and reliability requirements of the VNFs executing on the NFVI.

• Data and control plane testing of VNFs and their interactions with the NFV Infrastructure and the NFV MANO.

• Validating the performance, reliability and scaling capabilities of Network Services.

• NFVI pre-deployment validation part was developed in cooperation with OPNFV Yardstick.
• Guidelines for NFV interoperability testing
• Generic System Under Test (SUT) architecture for NFV
• Initial SUT configurations
• Interoperability feature areas
Identifying gaps between OpenStack NBI and IFA005/IFA006
Guidelines for test plan on path implementation through NFVI
- SUT options
  - Function placement
  - SDN application type
  - SDN controller type
- Metrics
  - VNFC instantiation time
  - Path instantiation
  - 1st packet latency
  - Std pkt transfer measurements
- Procedures
- Examples
Report on use cases and recommendations for VNF Snapshot

Use cases:
• Testing
• Troubleshooting
• Lifecycle management
  • During VNF lifecycle procedure
  • Quick VNF recovery

Gap Analysis with existing solutions

Framework, procedures and solutions

Recommendations to IFA specifications
• Policies, Fct Reqs on MANO, Ref Points
• Usage of DevOps and CI/CD in Telco environment
  • Focus on the handoff of VNF
• Background and overview
• Use cases
  • Supplier
  • Operator
  • Validator
• Test procedures
• Recommendations for package description enhancements
### TST007 – Guidelines for interop

- Interoperability Testing Guidelines for NFVI-VIM, MANO and VNF
- Detailed collection of test descriptions for most functionality
- Based on TST002 and 1st NFV Plugtests Test Plan

#### Test Description: NS scale out with an operator action

<table>
<thead>
<tr>
<th>Identifier</th>
<th>TD_NFV_NS_LCM_SCALE_OUT_001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Purpose</td>
<td>Verify that the NS can be successfully scaled out by adding VNF instances triggered by an operator action</td>
</tr>
</tbody>
</table>

#### Configuration
- SUT Configuration 1

#### References
- IFA005, IFA006[1], IFA007, IFA008, IFA010, IFA013

#### Applicability
- NFVO/VNF can request VIM to allocate virtualised resources
- VIM supports allocating virtualised resources
- NFVO supports triggering scale out with an operator’s action
- NFVO supports scale out by adding VNF instances
- NS/VNF supports scale out by adding VNF instances

#### Pre-test conditions
- NS is instantiated (TD_NFV_NS_LCM_INSTANTIATE_001)
- NFVI has the required amount of consumable virtual resources to run the scaled-out NS

<table>
<thead>
<tr>
<th>Test Sequence</th>
<th>Step</th>
<th>Type</th>
<th>Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stimulus</td>
<td>Trigger NS scale out by adding VNF instances to the NS in NFVO with an operator action</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>IOP Check</td>
<td>Verify that the additional VNF instance(s) have been deployed by querying the VNF</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>IOP Check</td>
<td>Verify that the additional resources have been allocated by the VIM according to the descriptors</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>IOP Check</td>
<td>Verify that the additional VNF instance(s) are running and reachable via their management network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>IOP Check</td>
<td>Verify that the additional VNF instance(s) have been configured according to the descriptors by querying the VNF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>IOP Check</td>
<td>Verify that the additional VNF instances(s), VL(s) and VNFFG(s) are connected according to the descriptors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>IOP Check</td>
<td>Verify that the NFVO indicates the scaling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Compute, Networking and Memory metrics for NFVI

Each Metric:
- Name & Background
- Parameters & Scope
- Units & Method of Measurement
- Definition
- Sources of Error, Discussion

Will be referenced by IFA027

Compute: Processor usage, utilization
Network: Packet, Octet, Dropped Packet, Errored Packet Counts
Memory: Buffered, Cached, Free, Slab

Done in cooperation with OPNFV Barometer
• Initial stages
• Vendor-agnostic definitions of performance metrics and the associated methods of measurement for Benchmarking networks supported in the NFVI
• Intended to serve as a basis for fair comparison of different implementations of NFVI
• Possible cooperation with OPNFV vsperf
Potential new Work Item

Reliability/Resilience testing

Testing
- Recovery from faults
- Long duration tests
- Negative testing

Focus on
- Metrics to be measured
- How to measure them
ETSI NFV TST interworking with open source

- Testing is a natural area for collaboration between ETSI NFV and open source projects
- ETSI NFV is happily doing test plans, reports and specification and let the open source projects to do the implementations
- TST WG is looking for feedback on ETSI NFV, but there is also a bug tracker
Linux Foundation Networking
and Orchestration White Paper:

Harmonizing
Open Source and Standards in the Telecom World

A Publication of The Linux Foundation
May 2017
More information:
NFV Technology Page (information)
http://www.etsi.org/nfv
NFV Portal (working area)
http://portal.etsi.org/nfv
NFV Proofs of Concept (information)
http://www.etsi.org/nfv-poc
NFV Plugtest (information & registration)
http://www.etsi.org/nfvplugtest
Open Area:
Drafts http://docbox.etsi.org/ISG/NFV/Open/Drafts/
This material was created using

- NFV(17)000135 by Silvia Almagia
- NFV (17)000121r1 by Pierre Lynch

and other works of the TST WG