Doctor Project Proposal

Fault Management and Maintenance:

- Proposed name for the project: Doctor
- Proposed name for the repository: doctor
- Project Categories: Requirements

Project description:

This project aims at developing requirements for Network Functions Virtualisation Infrastructure (NFVI) fault detection and notification through the northbound interface of Virtualised Infrastructure Manager (VIM). Such notification would be sent to Virtualised Network Function Manager (VNFM) or the NFV Orchestrator (NFVO). NFVI faults include fault in compute, network and storage resources, as well as other elements of NFVI e.g. hypervisor. Faults in all elements in NFVI that affects the proper functioning of the VNFs in question shall be handled in a step-by-step fashion.

In addition, requirements on VIM and its northbound interface for NFVI maintenance operation would also be developed, as its similarities with fault detection/notification feature.

The ultimate goal of this project is to realize an NFVI fault management and maintenance framework for telecom VNFs. Relevant fault events, their detection and recovery procedure, notification mechanism e.g. publish-subscribe model and other necessary features to realize the framework would be studied and requirements would be produced for relevant upstream projects. This project considers OpenStack as VIM.

Scope:

- Describe the problem being solved by project
  - lack of fault detection, notification and recovery mechanism in OpenStack
  - OpenStacks inability in receiving and executing maintenance instructions
    - Requirements shall be produced to solve the problems above

- Specify any interface/API specification proposed
  - Candidates of interfaces/APIs to be proposed by this project are:
    1. Fault notification from NFVI to VIM (Nf-Vi)
    2. Fault notification from VIM to VNFM/NFVO (Vi-Vnfm/Or-Vi)
    3. Recovery instruction to VIM (Vi-Vnfm, Or-Vi)
    4. Maintenance instruction to VIM

- Identify a list of features and functionality will be developed.
  - The following features are already identified during the project planning phase
    1. VIM collects/detects relevant fault information about NFVI elements
    2. VIM informs VNFM/NFVO who owns affected virtual resources e.g. VM
    3. VIM tries to recover automatically (for selected types of faults)
    4. VIM receives recovery instruction on affected virtual resources
    5. VIM receives maintenance instruction NFVI elements

- Identify what is in or out of scope.
  - In scope
    - OpenStack as VIM
    - NFVI fault items that affect the proper functioning of VNFs e.g. Evolved Packet Core (EPC)
    - Northbound interfaces of VIM
  - Out of scope
    - VNFM/NFVO side implementation
    - Existing fault detection mechanisms between VMs and their virtual resources via the Vn-Nf

- Describe how the project is extensible in future
  - Newer fault events would be incorporated as they become relevant
  - Extensible to fault management/maintenance items relevant to ODL, KVM

Testability: (optional, Project Categories: Integration & Testing)

N/A

Documentation: (optional, Project Categories: Documentation)

N/A

Dependencies:

- Identify similar projects is underway or being proposed in OPNFV or upstream project
  - High availability for VNFs

- Identify any open source upstream projects and release timeline.
  - OpenStack (Oct, 2015)
• Are there any external fora or standard development organization dependencies. If possible, list and informative and normative reference specifications.
  • ETSI NFV MANO GS
  • ETSI NFV INF GSs

Committers and Contributors:

• Name of and affiliation of the maintainer:

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Planned deliverables

• Described the project release package as OPNFV or open source upstream projects.
  • Northbound interface/API description
  • Implementation architecture and plan for OpenStack

• If project deliverables have multiple dependencies across other project categories, described linkage of the deliverables.
  • N/A

Proposed Release Schedule:

• When is the first release planned?
  • March, 2015
• Will this align with the current release cadence
  • Yes.