5GinFIRE
Introducing NFV-based experimental facilities

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IETF101

nfvrg - Network Function Virtualization
Objective

To build and operate an open, and extensible 5G NFV-based reference ecosystem of experimental facilities to foster experimentation with various vertical industries

– Driven by architectural (standards) and technological (open source) convergence principle
– Initial focus on Automotive & Smart Cities verticals

• As of today the 5GinFIRE ecosystem is already in operation ready to accept the first wave of experiments and get enhanced with additional functionality and testbeds
5GinFIRE Reference Model Architecture

- Based on existing open-source projects
  - OpenStack, OpenDaylight
- Based on ETSI reference architecture of MANO functionality
  - Open Source MANO
- Introducing and integrating infrastructures from verticals
- Generalizing the concept of VNFs to account for functionalities other than network, namely, for verticals, aka VxFs
  - Universal management of virtual functions
- Automated deployment of VxFs and creation of VxF stores
Aligned with ETSI ref architecture
(Internal) Use Cases ➔ Verticals

- Automotive
  - Assisted overtaking
- Smart Cities
  - Safety
- Generic Use Cases
  - Basic validation service (Pingpong ~ ”Hello World!”)
  - Unifier Gateway
    - How to deploy a softwarised 5G cell (eNodeB + Core)
- The aim of the use cases has been to instantiate the abstract experimentation workflow, i.e.
  - a. To act as blueprints for testing 5GinFIRE ecosystem functionality and operation
  - b. Create the first set of VxFs
  - c. Use it for tutorial and best practices purposes to third parties
- A Wiki has been implemented to guide third parties in carrying out experimentation using 5GinFIRE
5GinFIRE Experimentation Workflow
Technologies, Infrastructures and Verticals
5GinFIRE Experimentation Workflow

Technologies, Infrastructures and Verticals

Application composer toolkit

 juju

FED4FIRE

5GinFIRE Portal and Middleware

OASIS

TOSCA CSAR spec

VxF UT

Automotive EVI model/spec repository

VxF UT

5GinFIRE

Services Orchestrator

VxF UT

Automotive VxF bundles

OpenMANO

Orchestrator (mgt NF infrastructure)

VxF UT

Application Deployable template VxFs

VxF UT

Service Orchestrator (SO)

Resource orchestrator (RO)

VNF Configuration & Abstraction (VCA)

User Interface

Launchpad

Open Source MANO

5G resources

MEC hosting

FIRE testbeds

OpenVIM

ODL

OpenStack

ONOS

VMware

Floodlight

AWS

VIM plugins

OpenVIM

ODL

OpenStack

ONOS

VMware

Floodlight

AWS

VIM plugins

CANCEl

BACK

LAUNCH
5GinFIRE Experimentation Workflow
Open Calls

• To allow/enable experimentation in 5GINFIRE
  – By using its experimental facilities
• To improve and enlarge 5GINFIRE experimental facilities
  – New functionalities, new infrastructures
• Two Open Calls are planned
  – Year 1/2 – experiments and infrastructures/functions
  – Year 2/3 – experiments and maybe infrastructures
• ~2,500,000€ available for funding Third Parties
1st Open Call – phase 1

- Opened 1 December 2017
  - Submission deadline: 28 February 2018
- 60% of OC-1 budget offered in phase 1
  - Phase 2 to be launched in spring 2018
- OC2 – autumn 2018
- Open Call categories
  - Category 1: Invite experimenters to use existing 5GINFIRE facilities (375,000€, max. 75,000€ per proposal)
  - Category 2 (375,000€):
    - Invite open source developers to provide functionalities for 5GINFIRE processes (max. 60,000€ per proposal)
    - Invite designers and facilities providers (from vertical industries) to join 5GINFIRE and offer their facilities for experimentation (max. 125,000€ per proposal)
5GinFIRE Open Source

• 5GinFIRE organization
  • https://github.com/5GinFIRE/

• Portal API
  • https://github.com/5GinFIRE/eu.5ginfire.portal.api
  • https://github.com/5GinFIRE/eu.5ginFIRE.riftioyangschema2java
  • https://github.com/5GinFIRE/nfv-requirements-extractor

• Portal web frontend
  • https://github.com/5GinFIRE/eu.5ginfire.portal.web
  • https://github.com/5GinFIRE/eu.5ginfire.portal.web/wiki (development)

• Sample descriptors
  • https://github.com/5GinFIRE/mano
  • https://github.com/5GinFIRE/ffmpeg_transcoder_vnf
  • https://github.com/5GinFIRE/opencv_transcoder_vnf

• Support Wiki and documentation
  • https://github.com/5GinFIRE/wiki

• Towards OSM THREE support
  • https://github.com/5GinFIRE/eu.5ginfire.osm3im2java
Thank You!

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