NFV Trends and OPS work?

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Network Functions Virtualisation: A Layered view

- **Layered View**
  - **NFV Infrastructure (NFVI)**
  - **Virtualization SW**
  - **HW Resources**
  - **Virtual Resources**

- **Logical Abstractions**
  - Logical Links
  - End Point

- **VNF Instances**
  - VNF
  - VNF
  - VNF
  - VNF

- **Network Service**
  - VNF
  - PNF

- **E2E Network Service**

- **Management and Orchestration**

PNF: Physical Network Function
VNF: Virtualized Network Function
MANO Reference Architecture and Overview of Interfaces

The information on interfaces is outdated. See ongoing work on slide #6.
Descriptors associated to

- Network Service (NS)
- Virtual Network Function (VNF)
- Virtual Links (VL)
- VNF Forwarding Graph (VNFFG)
- Physical Network Function (PNF)

Static & Runtime

- **Design** = Descriptor (e.g. VNFD)
- **Runtime** = Record (e.g. VNFR)

*Records stores the actual state of MANO constructs*
ETSI NFV IFA WG Phase 2 Work Plan

IFA010  Functional Requirements
IFA011  VNF Package & VNFD
IFA014  NSD
IFA015  NFV Information Model (Report)
IFA009  Architectural Options (Report)

IFA011*  Acceleration Use Cases
IFA002  Acceleration VNF Interfaces
IFA003  Acceleration Switching Aspects
IFA004  Acceleration Management Aspects

- Published ETSI NFV documents: http://www.etsi.org/technologies-clusters/technologies/nfv#Specifications
Brainstorming Session

What is the IETF doing?
What should the IETF be doing?
What should OPS be doing?
Note: Working Group or Research Group?
MultiSDO Information Modelling Workshop
(Louisville, Colorado USA, January 13-14, 2016)

• Participating organizations named in alphabetical order: 3GPP, ATIS, Broadband Forum, DMTF, ETSI NFV, IETF, ITU-T SG15, MEF, OASIS/TOSCA, Open Cloud Connect, ONF, OpenDaylight, OPNFV and TM-Forum

• Useful information sharing across organizations concerning IM/DM affecting/affected by NFV,

• Collected a set of issues affecting “the ideal” IM/DM work outcome for NFV, agreed to meet again and share information on the progress of issue discussion.

• Presentations here.
NFV Reference Architectural Framework

nf-vnfm

Or-Vnfm

Ve-Vnfm

Nf-Vi

Os-Ma

Main NFV reference points

Other reference points

Execution reference points

OSS/BSS

NFV Orchestration

VNF Manager(s)

Virtualised Infrastructure Manager(s)

Service, VNF and Infrastructure Description

Virtual Computing

Virtual Storage

Virtual Network

Virtualisation Layer

VI-Ha

Hardware resources

Computing Hardware

Storage Hardware

Network Hardware

VNF 1

VNF 2

VNF 3

EM 1

EM 2

EM 3

Virtual NFV Description

Or-Vi

NFV Management and Orchestration

Vi-Vnfm

Vn-Nf

Or-Vnfm
NFV Reference Architectural Framework

End to end service assurance?

YANG catalog

Service YANG

OpenSource Mano, Open O

RESTCONF
NETCONF
YANG

NFV Management and Orchestration

Virtualised Infrastructure Manager(s)

Openstack

Virtualised
Infrastructure
Manager(s)

YANG catalog

OSS/BSS

EM 1

EM 2

EM 3

I2NSF

VNF 2

VNF 3

NFVI

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Hardware resources

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NFV Orchestration

VNF Manager(s)

Service, VNF and Infrastructure Description

Openstack

Virtualised Infrastructure Manager(s)
Next steps for the OPS area?

• NFV taxonomy document (IETF focus)
• Alarm (draft-vallin-alarm-yang-module-00)
• https://datatracker.ietf.org/doc/draft-irtf-nfvrg-gaps-network-virtualization/
  / => similar doc for OPS?