ETSI NFV Management and Orchestration - An Update

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IETF #89, London, England
Progress In NFV MANO WG since IETF #88

- Adopted the interface approach and defined a series of interfaces for the MANO architecture
- Cleaned up descriptors and information elements to represent service graph topology and connectivity, i.e. virtual links, endpoints.
- Discussed and adopted diverse message flows,
- Discussion on architectural improvements are ongoing,
- IETF, 3GPP, DMTF, TOSCA and OpenStack gap analysis are in development.
MANO Interfaces

- Compute, Storage and Network APIs
- VNF image management interface
- VNF package management interface
- Resource catalogue management interface
- Resource management interface
- Resource fault management interface
- Resource performance management interface
- Network Service Descriptor management interface
- Network Service lifecycle management interface
- Network Service lifecycle change notifications interface
- Network Service fault management interface
- VNF lifecycle management Interface
- VNF lifecycle changes notifications interface
- VNF configuration interface
- VNF fault management interface
- VNF performance management interface
Next Steps NFV MANO WG

- Finalize the architectural improvement discussion,
- Need to incorporate SDN controller into the MANO architecture,
- Need to check whether NFV requirements and the requirements from different WGs are supported,
- Need to check whether all NFV use cases are supported,
- Provide a gap analysis for MANO interfaces and information elements using a template and for different SDOs,
- Finalize IETF gap analysis for related IETF WGs.
  - This is input for discussion only. IETF WGs will assess and decide case-by-case by themselves on what is appropriate to do.
  - New work might be proposed by individual companies based on IETF process.
MANO WG Schedule

• WG approval and release freeze of MANO GS document will be in mid-June,
  – Release maintenance and cross-WG alignment until NFV #8 (mid of November)
• NFV documents from all WGs and the ISG level documents (e.g. E2E Architectural Framework 2.0) will be published by NFV #9 (February).
• With NFV #9 ETSI NFV ISG phase 1 is going to be terminated, where all active WGs are planned to close.
  – The organization of ETSI NFV ISG phase 2.0 is currently in discussion.
Back-Up
References

- Published E2E Arch, REQ, Use Case, Terminology documents in ETSI NFV Open Area:
  - [http://docbox.etsi.org/ISG/NFV/Open/Published/](http://docbox.etsi.org/ISG/NFV/Open/Published/)

- Published ETSI NFV white paper:

- ETSI member area:
  - Current NFV MANO WG WI document: DGS/NFV-MAN001 (ongoing work)
  - ETSI NFV ISG portal:
  - NFV MANO WG on ETSI portal:
NFV Management and Orchestration Architecture

- NFV Orchestrator (NFVO)
  - NS Catalog
  - VNF Catalog
  - NFV Instances
  - NFVI Resources

- VNF Manager (VNFM)
  - VeNf-Vnfm
  - VeEn-Vnfm

- Virtualised Infrastructure Manager (VIM)
  - Vn-Nf
  - Vnfm-Vi

- OSS/BSS

- EMS

- VNF

- NFVI

Source: ETSI NFV MANO WI document (work ongoing)
Overview of MANO Descriptor Files

Network Service Descriptor:
- E2E Service Description & KPIs
- Info about Component VNFFGs, and associated Endpoints

VNFF Forwarding Graph Descriptor:
- Info about Component VNFF, PNFD, and associated Links
- Inter NF KPIs with dependent VNFs /PNFs in service graph

Virtual Link Descriptor:
- Link type (eg Point to Point, Multipoint), Inter VNF, & VNFF to legacy network links, SAN
- KPIs (eg Bandwidth, QoS, Latency)
- Network type (eg Hypervisor vSwitch, NIC eSwitch, Cluster VEPA or FCoE/IB, WAN)

Virtual Network Function Descriptor:
- Compute requirements and SLAs
- For each Component sub functions, (eg Processing, memory, Storage access requirements & SLAs)
- Reliability SLAs/class
- Intra VNF component links

Physical Network Function Descriptor:
- Reliability SLAs/class
- Legacy network links

Service order with parameters
- NSIDs, VNFFGID, VNFIDs, VLIDs

Service Instance
- E2E service instance customized from templates by NFVO
- Component record pointers, and real time status

Graph Instance
- Graph customized from templates by NFVO
- Component record pointers, and real time status

Link Instance
- VNIs instantiated in NFVI by NFVO & VIM

VNF Instance
- VNFs instantiated by NVFO, VNFM & VIM

PNF Instance
- PNFs incorporated by NVFO

Source: ETSI NFV MANO WI document (work ongoing)