(A true story on) Achieving end-to-end NFV with OpenStack and Open Source MANO

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Gianpietro Lavado - Senior Architect, Whitestack
Why are we doing this?

Why NFV?
We want more efficient networks by **not** having to depend on purpose-built appliances.

Why a MANO stack?
We want more efficient and agile services by automating end-to-end virtualized network services (not just VMs/containers).

Why Open Source?
Open Source has proved to **accelerate innovation** and reduce dependency on vendors.

→ So, we want to build an open-source-based NFV MANO stack!
Choosing the right VIM: the easy part

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Choosing the right (upper) MANO

2017: we were looking for a **working solution** and **active community** to start contributing with.

- **OpenStack**: Working solution, Limited activity, Technically complete but too integrated to VIM
- **Fraunhofer FOKUS**: Working solution, Limited activity, Technically strong
- **Open Baton**: Difficult to get started, Huge activity, Technically complete but maybe too wide for our use-cases
- **ETSI MANO**: Working solution, Large activity, Huge leap forward in Release 4

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Why Open Source MANO?

- **It just solves the problem**
  Lifecycle management of Network Services on brownfield (existing networks!)

- **It’s lean!**
  Easy to get started (dockers on your laptop, including OpenStack emulator!) → attracts a diverse community

- **It’s truly open**
  Reminds us of OpenStack :)

- **It’s constantly fed by Operator’s real use-cases**
  ...as OSM feeds ETSI and vice versa

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So we got our open MANO/VIM stack!

...which we successfully validated at the ETSI 2nd NFV Plugtests, and are taking next week to the 3rd ETSI Plugtests edition & OPNFV PlugFest

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The two architectures together

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OpenStack main features around NFV

OpenStack main available features for NFV have to do with controlling Enhanced Platform Awareness, Service Function Chaining and Network Slicing features.

Huge Pages

CPU Pinning

Service Function Chaining

Network Slicing Features

NUMA Topology Awareness

Data Plane assignment

A summary on 2nd ETSI NFV Plugtests from the VIM perspective:

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Open Source MANO main features

Open Source MANO available features at Release 4 are already getting beyond the basics

- Network Services main Lifecycle Management
- Enhanced Platform Awareness Management
- VNF post-instantiation & day-2 configurations
- SDN dataplane assist for underlay networks
- VNF (VIM) metrics collection, alarms & thresholds
- Enhanced performance & fault management through analytics platforms
- VNF (direct) metrics collection, alarms & thresholds (in progress for 4.x.x)
- Auto-scaling based on VIM and VNF metrics (in progress for 4.x.x)
- Support for Kubernetes and Network Slicing (planned for next release)

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Let's see them in action! (OSM R4 preview)

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OSM Release 4 - Clients & NBI

Unified NBI can control any OSM component through the bus

OSM KAFKA BUS

OSM CLI

LCM module

RO module

MON module

PM module

OSM Light UI
OSM Release 4 - Metrics Visualization

**Optional tools**

1. **MON** collects VIM/VNF metrics and puts on the bus
2. Prometheus reads and stores selected VNF metrics
3. Grafana presents selected VNF metrics

**OSM KAFKA BUS**

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OSM Release 4 - Events Visualization

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1. Creates alarms through MON, based on metric thresholds
2. Ensures alarms and notifications flow between PM and VIM/VNFs
3. When alarms are triggered, PM decides what to do (log, scale, etc.)
4. Logs can be collected through TCP or message bus

Optional tools:
- Collect & Transform
- Search & Analyze
- Visualize & Manage

KAFKA BUS

PM module

MON module

vnf1

vnf2

openstack

vmware

amazon

microsoft

whitestack
Want yours?

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...or your favorite one!

...and at least three others getting their distribution ready within 2018

...or your favorite one!
Questions?
glavado@whitestack.com