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VANCOUVER, BC
May 21-24, 2018

whitestack

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

May 2018

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Why are we doing this?

Why NFV?

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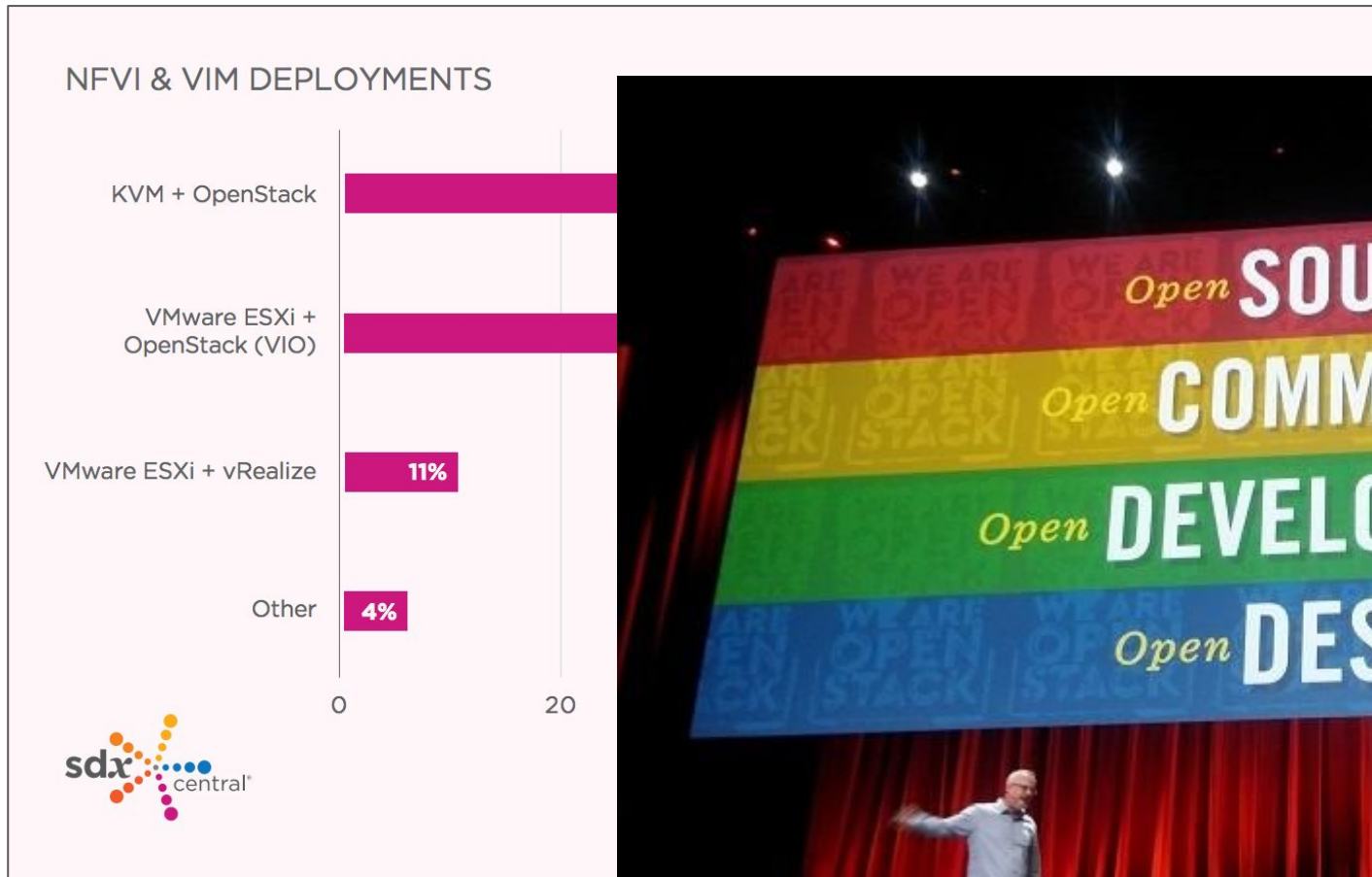
Why a MANO stack?

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
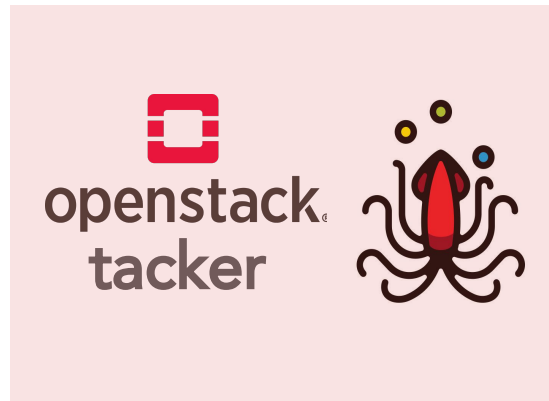
→ **So, we want to build an open-source-based NFV MANO stack!**

Choosing the right VIM: the easy part

Choosing the right (upper) MANO

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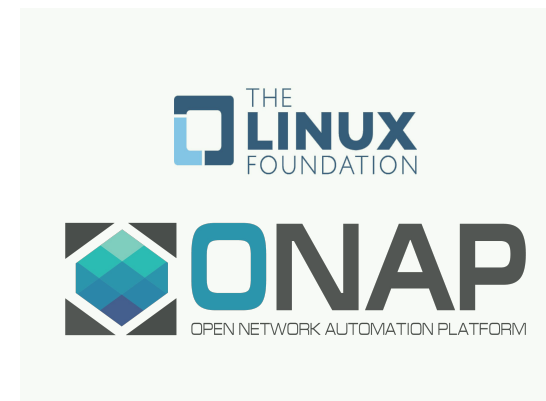

Working solution	**Working solution**	Difficult to get started	**Working solution**
Limited activity	Limited activity	**Huge activity**	**Large activity**
Technically complete but too integrated to VIM	**Technically strong**	Technically complete but maybe too wide for our use-cases	**Huge leap forward in Release 4**

Why Open Source MANO?

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- It just **solves the problem**

  Lifecycle management of Network Services on brownfield (existing networks!)
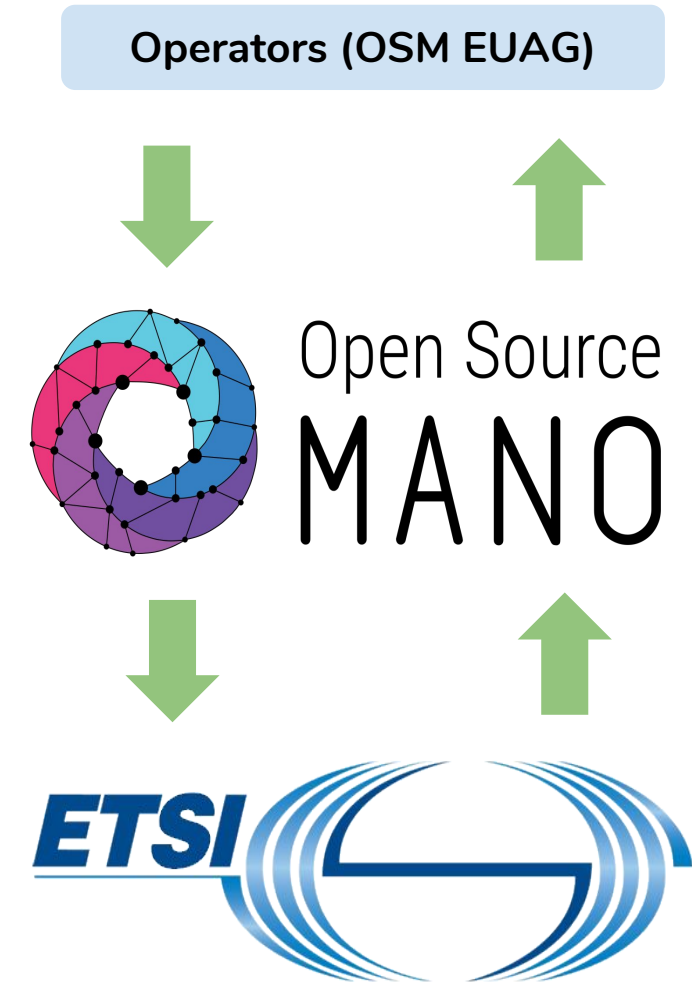
- It's **lean!**

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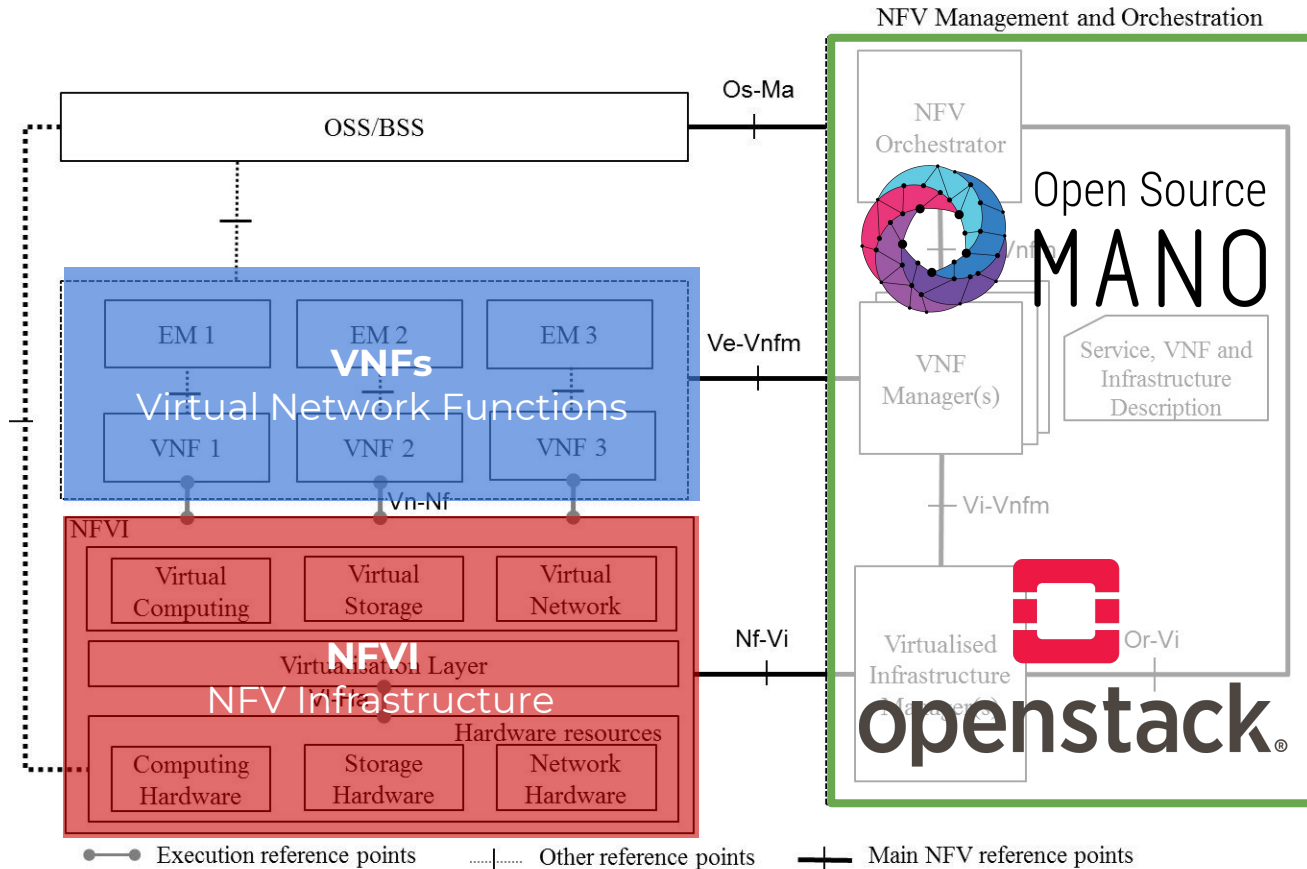
- It's **truly open**

  Reminds us of OpenStack :)

- It's constantly **fed by Operator's real use-cases**

  ...as OSM feeds ETSI and vice versa

Operators (OSM EUAG)
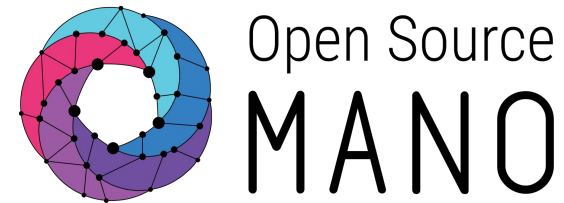
Open Source MANO

ETSI
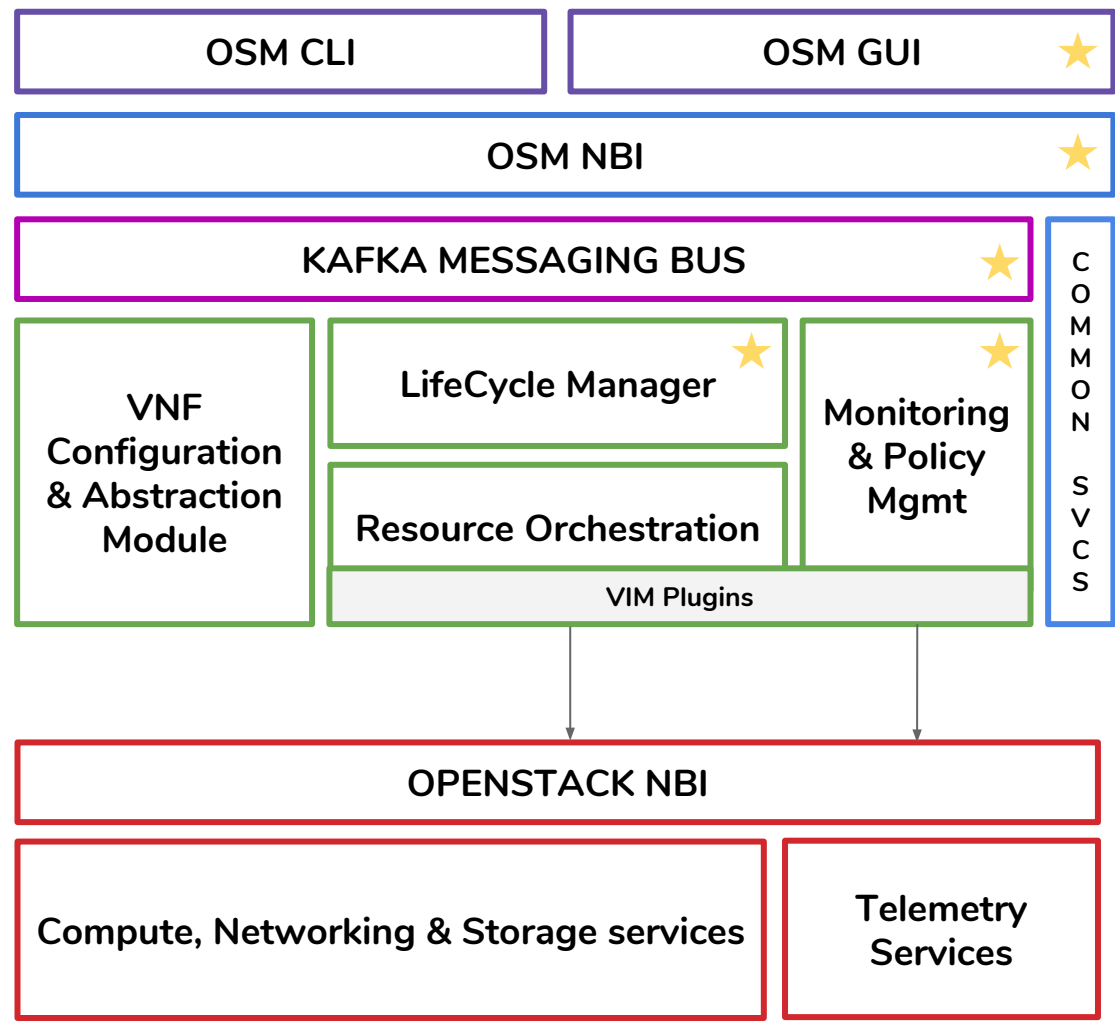
So we got our open MANO/VIM stack!

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

The two architectures together

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OSM CLI

OSM GUI ★

OSM NBI ★

KAFKA MESSAGING BUS ★

Open Source MANO

★ new / updated

VNF Configuration & Abstraction Module

LifeCycle Manager ★

Resource Orchestration

Monitoring & Policy Mgmt ★

VIM Plugins

C O M M O N   S V C S

OSM also orchestrates:

vmware vCloud Director

amazon web services

onos Open Network Operating System

Floodlight

OPEN DAYLIGHT

OPENSTACK NBI

Compute, Networking & Storage services

Telemetry Services

openstack®

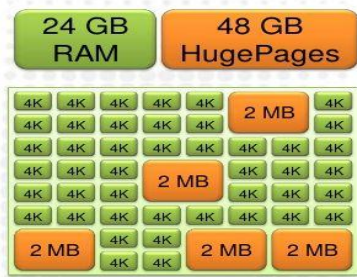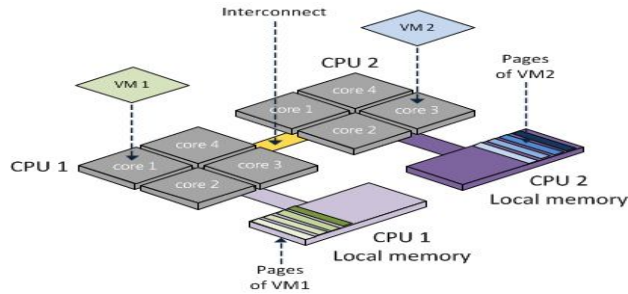*(A true story on) Achieving end-to-end NFV with OpenStack and Open Source MANO*

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
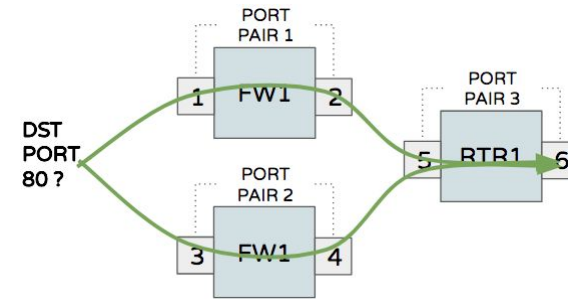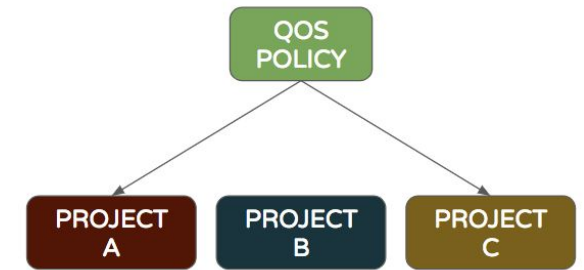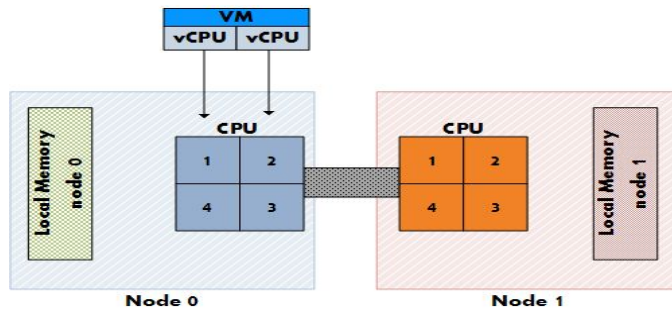
Huge Pages

CPU Pinning
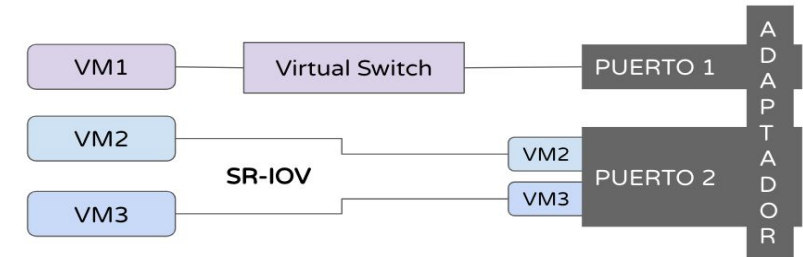
Service Function Chaining

Network Slicing Features
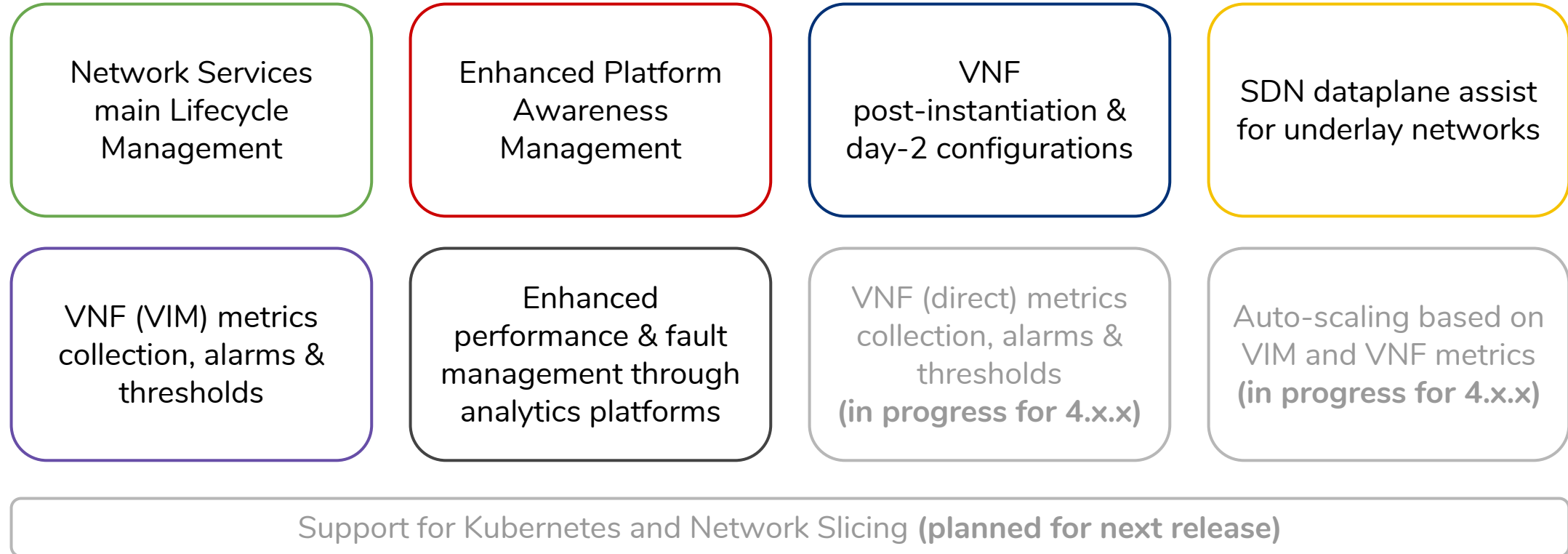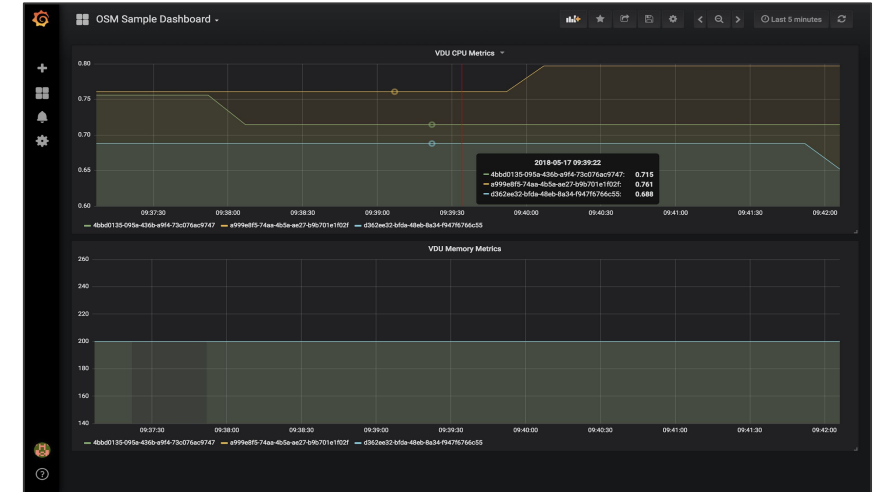
NUMA Topology Awareness

Data Plane assignment

A summary on 2nd ETSI NFV Plugtests from the VIM perspective:
https://www.linkedin.com/pulse/nfv-reaching-its-prime-time-part-2-2nd-etsi-plugtests-lavado/ → https://goo.gl/Fwp3wh

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)**

A summary on 2nd ETSI NFV Plugtests from the MANO perspective:
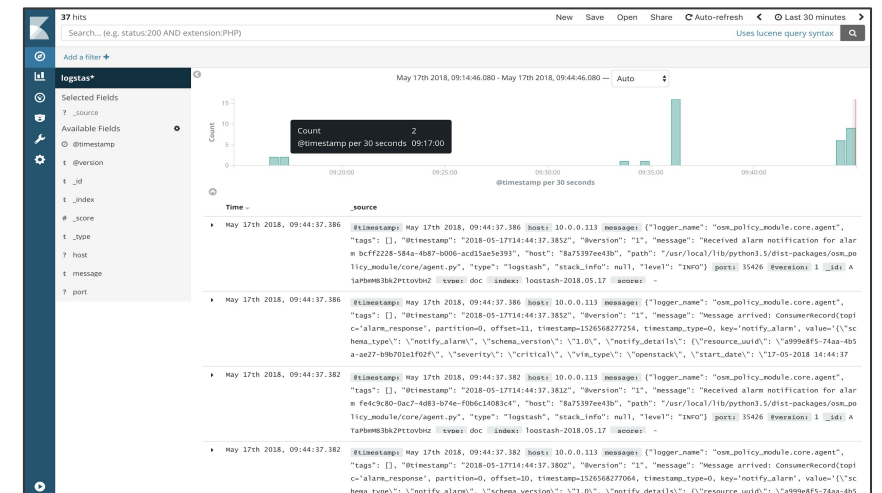https://www.linkedin.com/pulse/nfv-reaching-its-prime-time-part-3-2nd-etsi-plugtests-lavado/ → https://goo.gl/LMx2Fh

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

OSM Release 4 - Clients & NBI
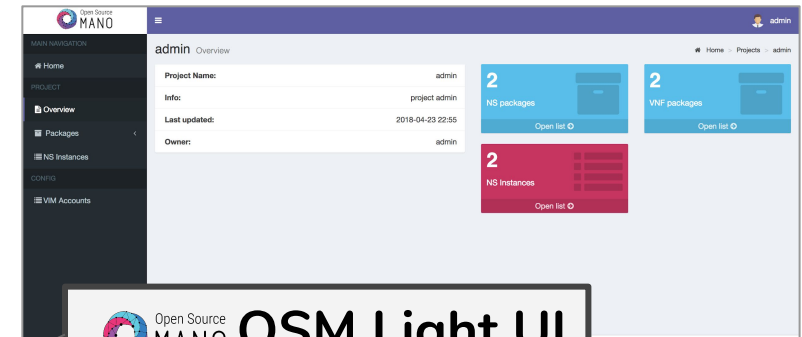
OSM Release 4 - Metrics Visualization

Optional tools

(3) Grafana presents selected VNF metrics

(2) Prometheus reads and stores selected VNF metrics

TSDB

OSM KAFKA BUS

(1) MON collects VIM/VNF metrics and puts on the bus

MON module
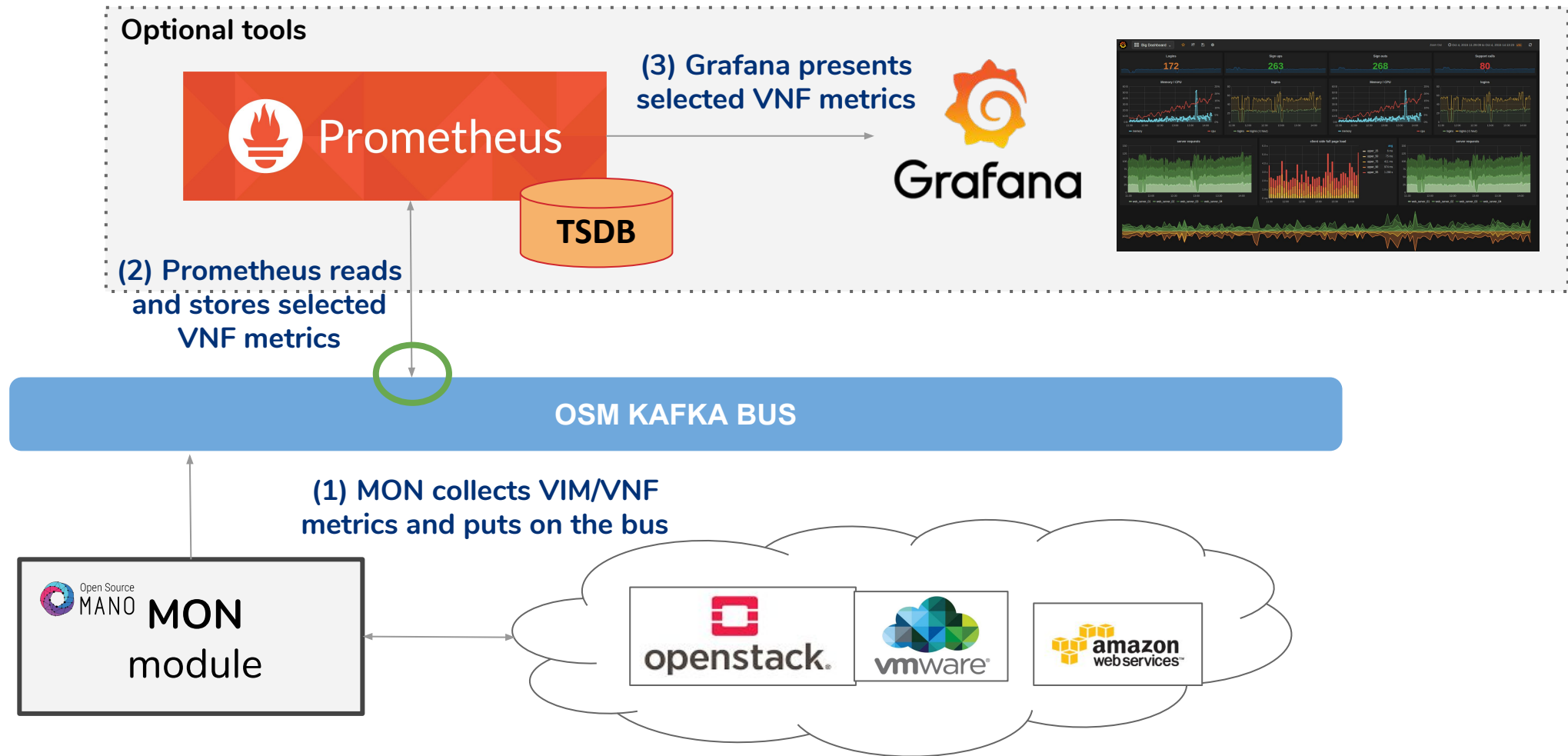
OSM Release 4 - Events Visualization

Optional tools

Collect & Transform — **logstash**

Search & Analyze — **elasticsearch**

Visualize & Manage — **kibana**

(4) Logs can be collected through TCP or message bus

KAFKA BUS

(3) When alarms are triggered, PM decides what to do (log, scale, etc.)

Open Source MANO — PM module

Open Source MANO — MON module

vnf1 vnf2

openstack vmware amazon web services

(1) Creates alarms through MON, based on metric thresholds

(2) Ensures alarms and notifications flow between PM and VIM/VNFs

Want yours?

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

...or your favorite one!

Questions?

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