

Open Source MANO

Introduction to Open Source MANO

Network function management and orchestration

Wajeeha Hamid, OSM MARCOM, Canonical

Network Function Virtualization

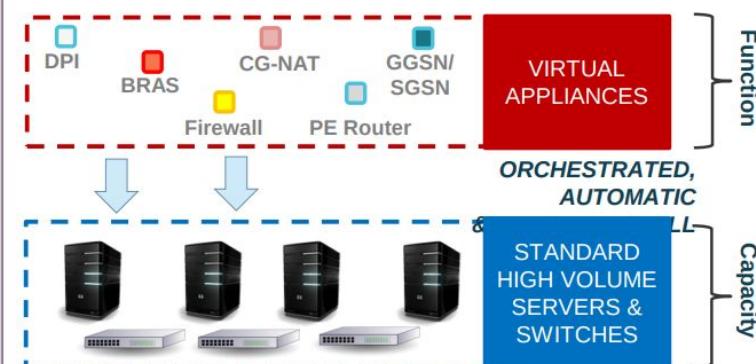
Network functionalities are fully defined by SW, minimising dependence on HW constraints

Traditional Network Model: APPLIANCE APPROACH



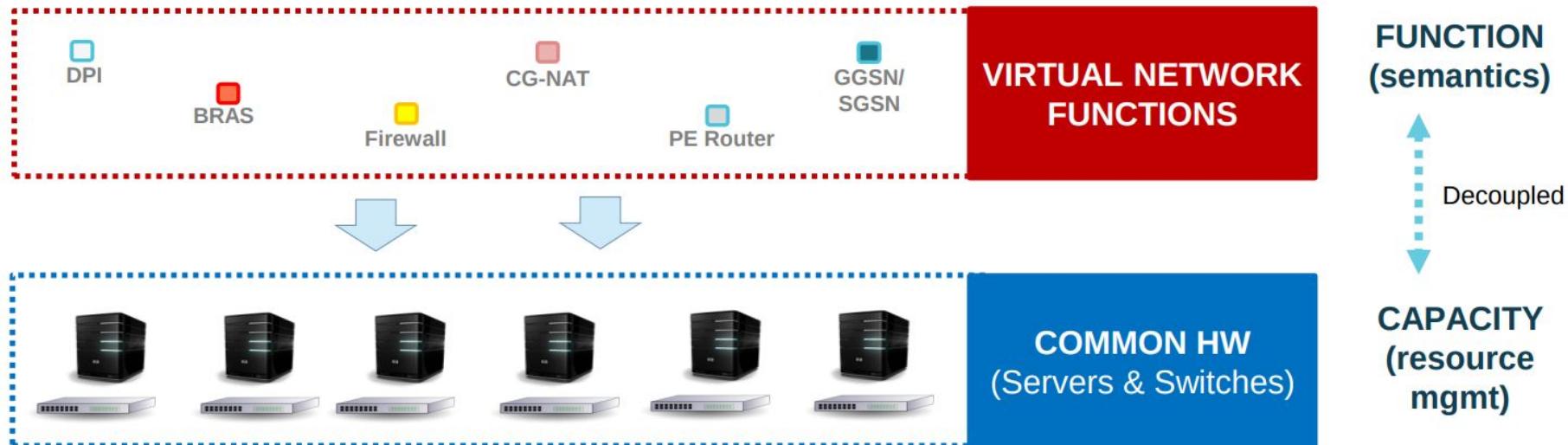
- Network functionalities are **based on specific HW with specific SW linked to HW vendors**
- **One physical node per role**

Virtualised Network Model: VIRTUAL APPLIANCE APPROACH



- Network functionalities are **SW-based over COTS HW**
- **Multiple roles over same HW**

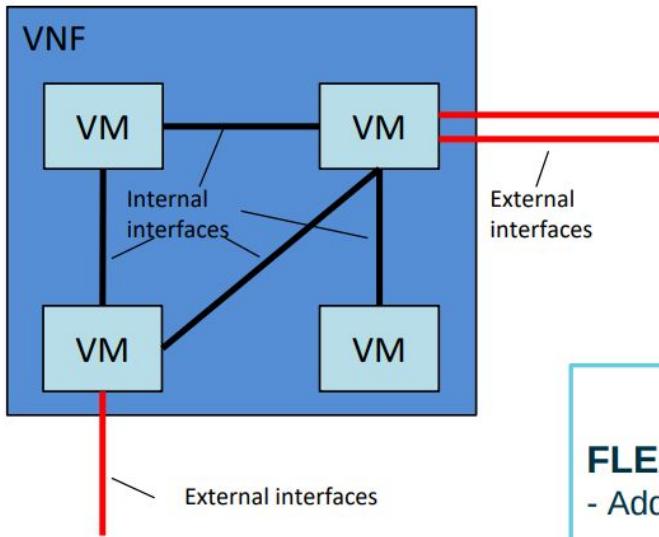
Network Function Virtualization



NFV adoption is increasing

More and more network functions
become available (virtual, containerised, etc.)

Network Functions



A network function is any network node (virtualized or containerized) with well defined interfaces and functions

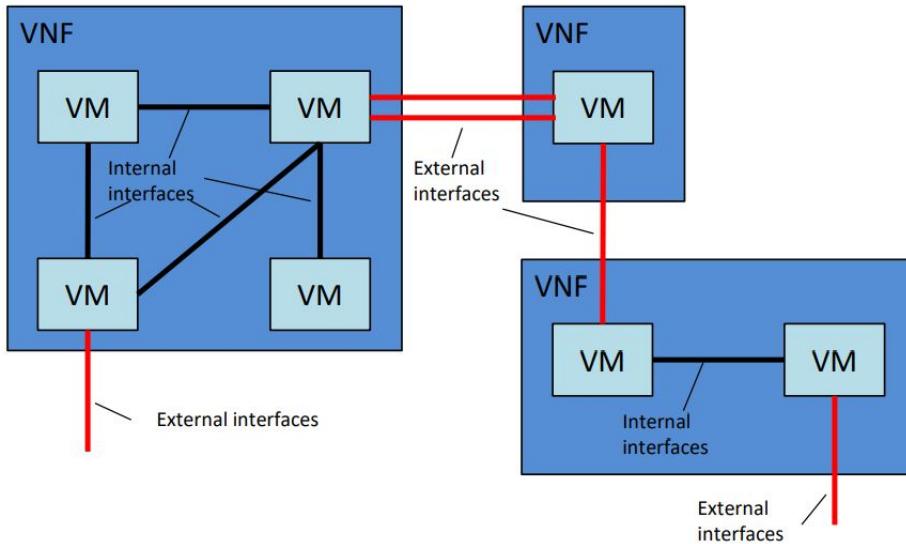
FLEXIBLE SCALING

- Add more VMs as you grow

SIMPLER ADDITION OF NEW FEATURES

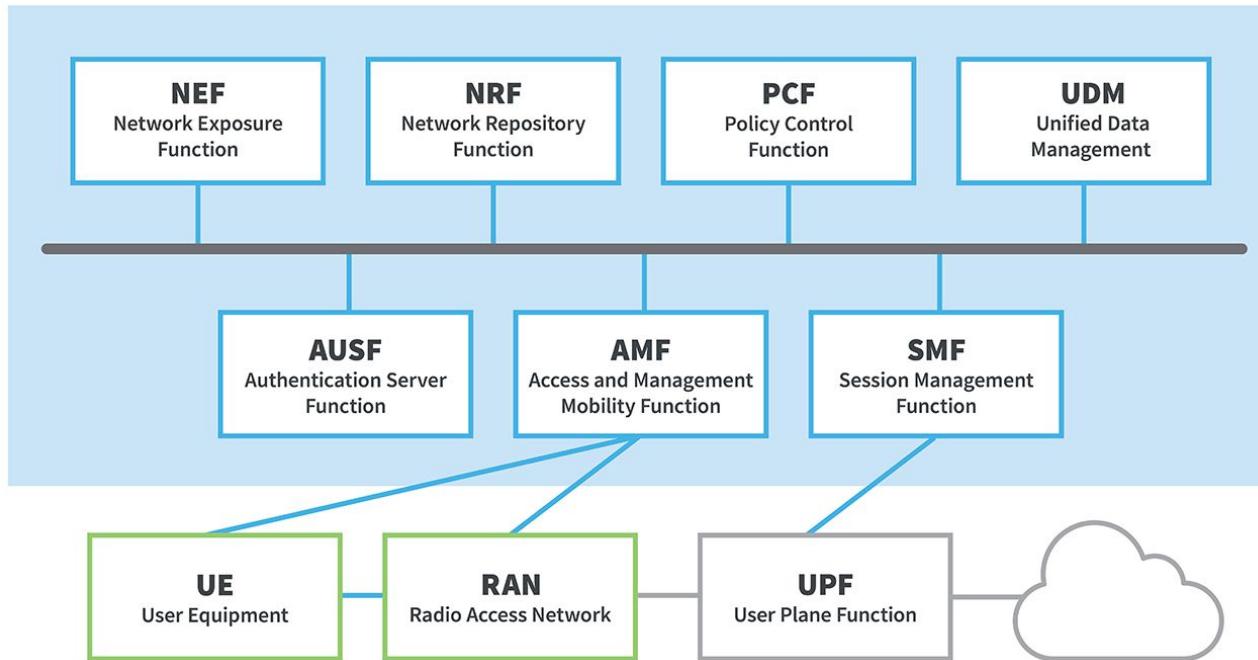
- Can be isolated in new VMs

Network Services



A network service is any network node (virtualized or containerized) consisting of interconnected VNFs

Network Functions in Telcos



NEF, NRF, PCF, UDM, AUSF, AMF and SMF in this 5G architecture are network functions

5G network functions

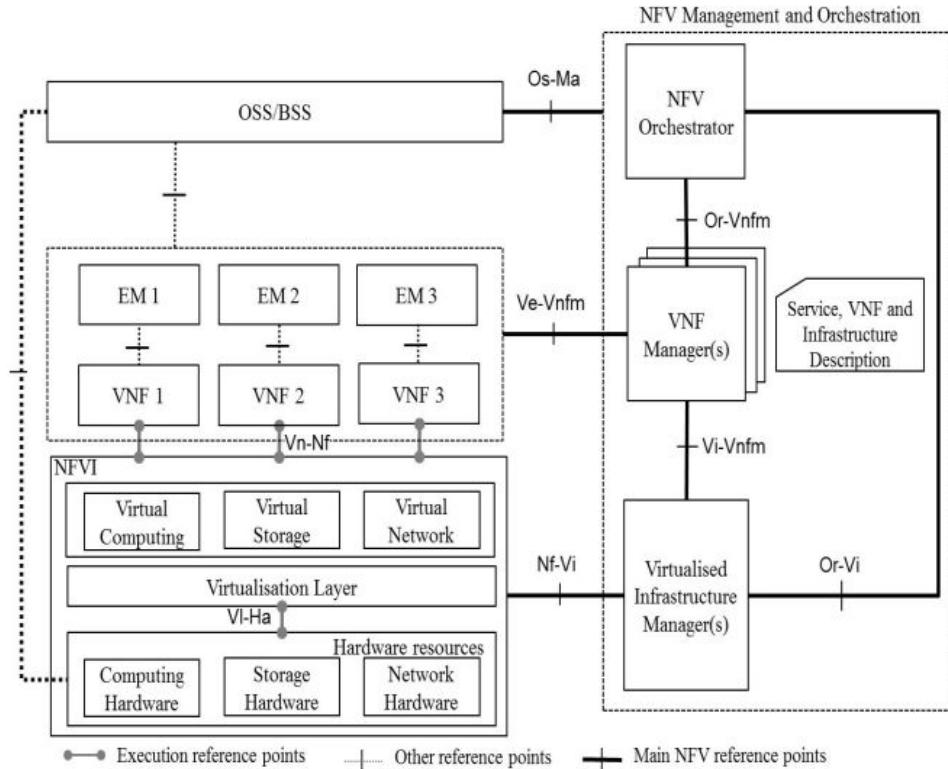
All of them have to be
deployed, managed and orchestrated

Those network functions can be provided by multiple vendors

So, multiple vendors will provide multiple orchestrators

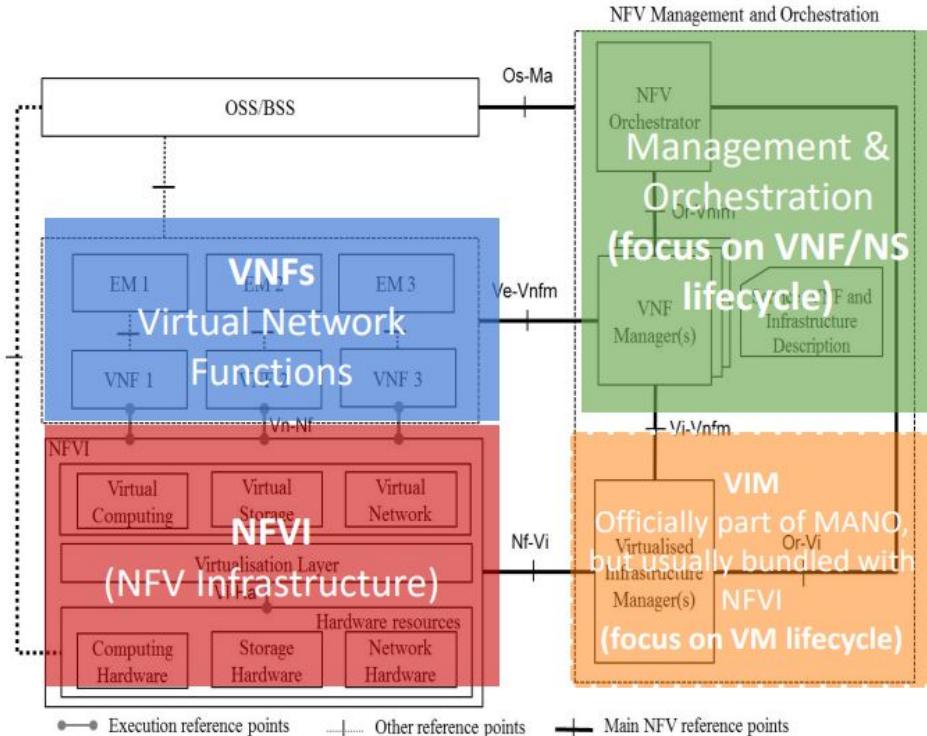
All of them need automated life-cycle management of network services for Day-0 to Day-N operations

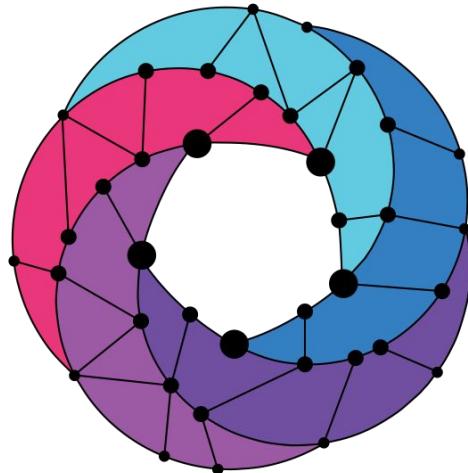
ETSI NFV stack



NFV Architecture defined in [NFV002](#)

ETSI NFV stack



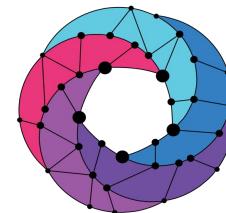


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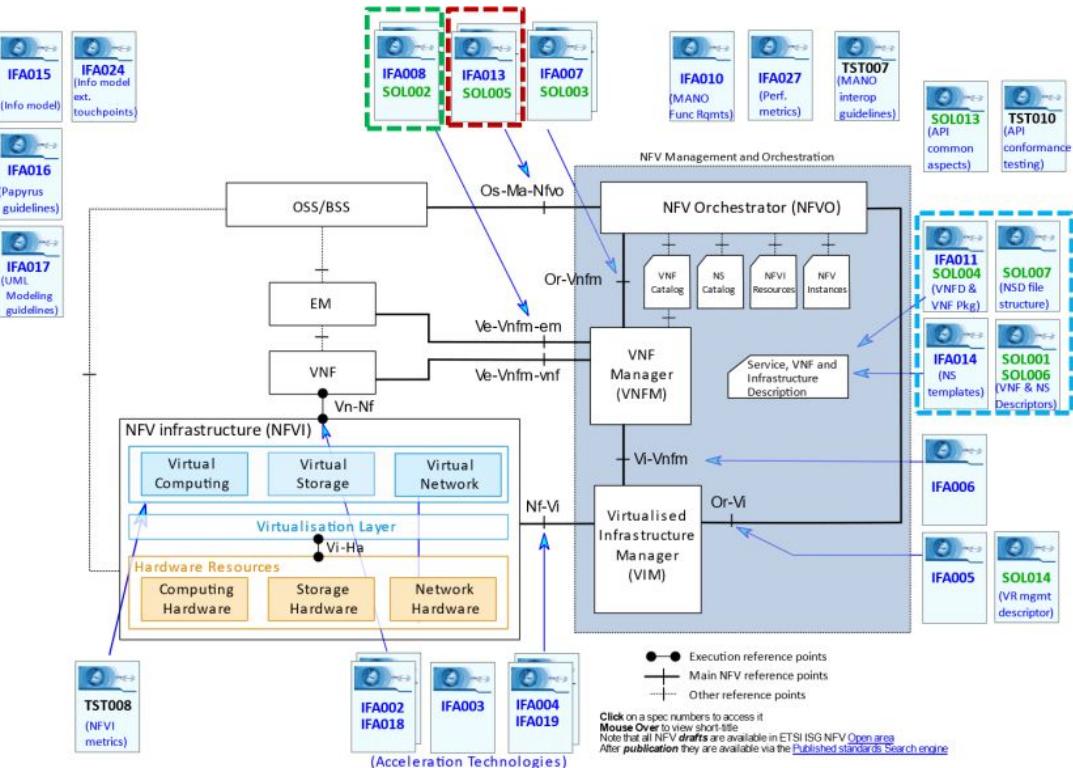


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What is OSM?



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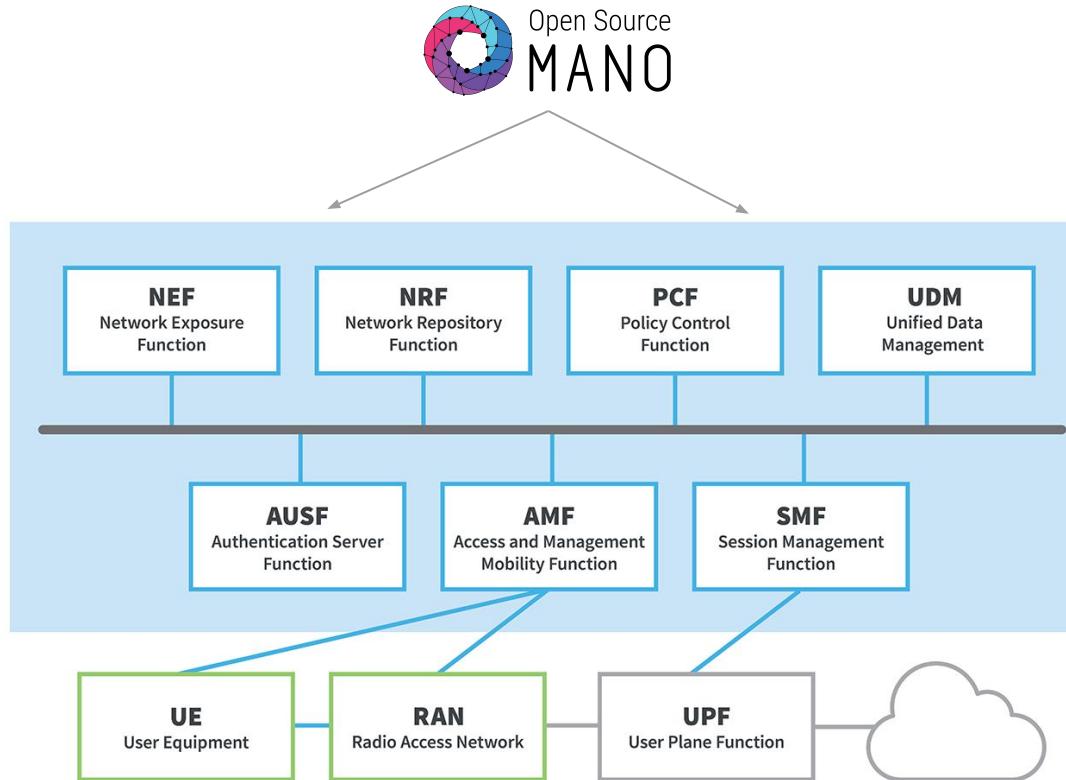


**Os-Ma-Nfvo reference point
(interface between OSS/BSS and NFVO)**

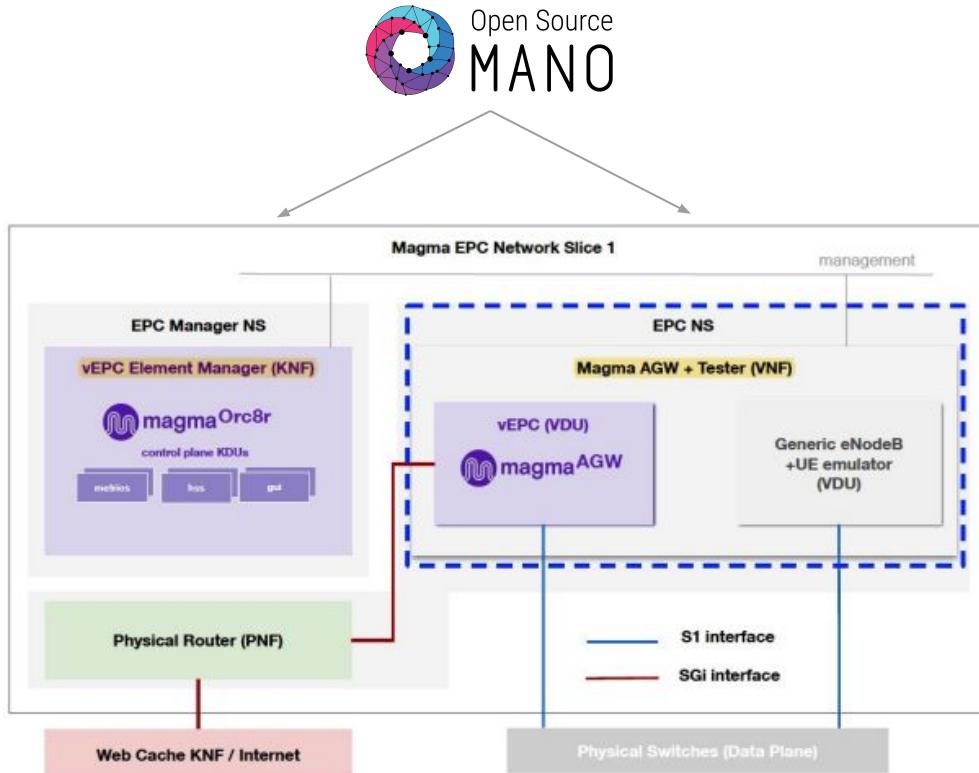
**Ve-Vnfm-em/vnf reference points
(interface between VNFM and EM/VNF)**

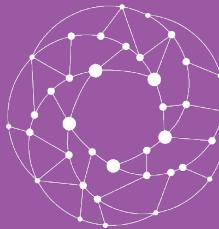
VNF and NS descriptors and packages

OSM in the picture..



Magma network functions with OSM





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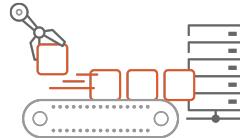
OSM features/capabilities

OSM capabilities

Infrastructure
management



Network function
On-boarding



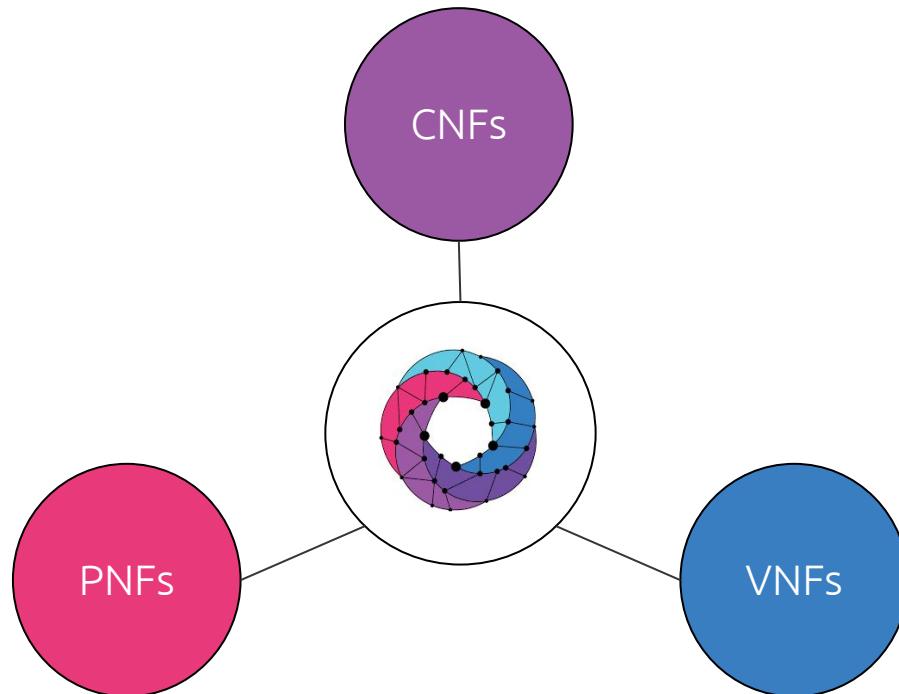
Network function
Management



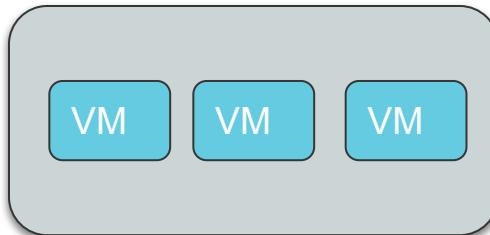
Scaling and business
continuity



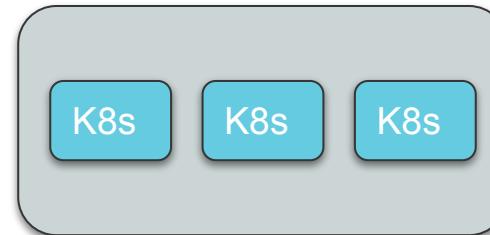
Multiple types of workloads, single engine



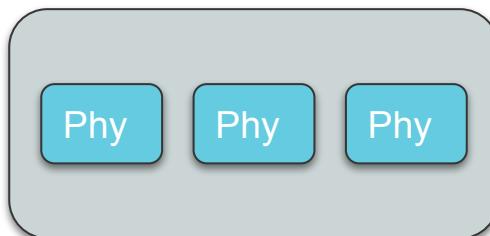
All VMs - Virtualized network function



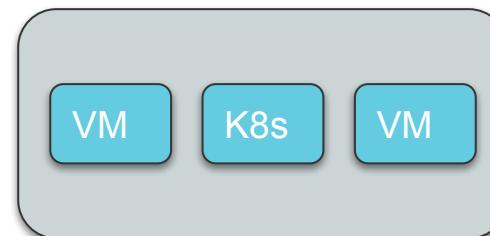
All Containers - Cloud-native network function



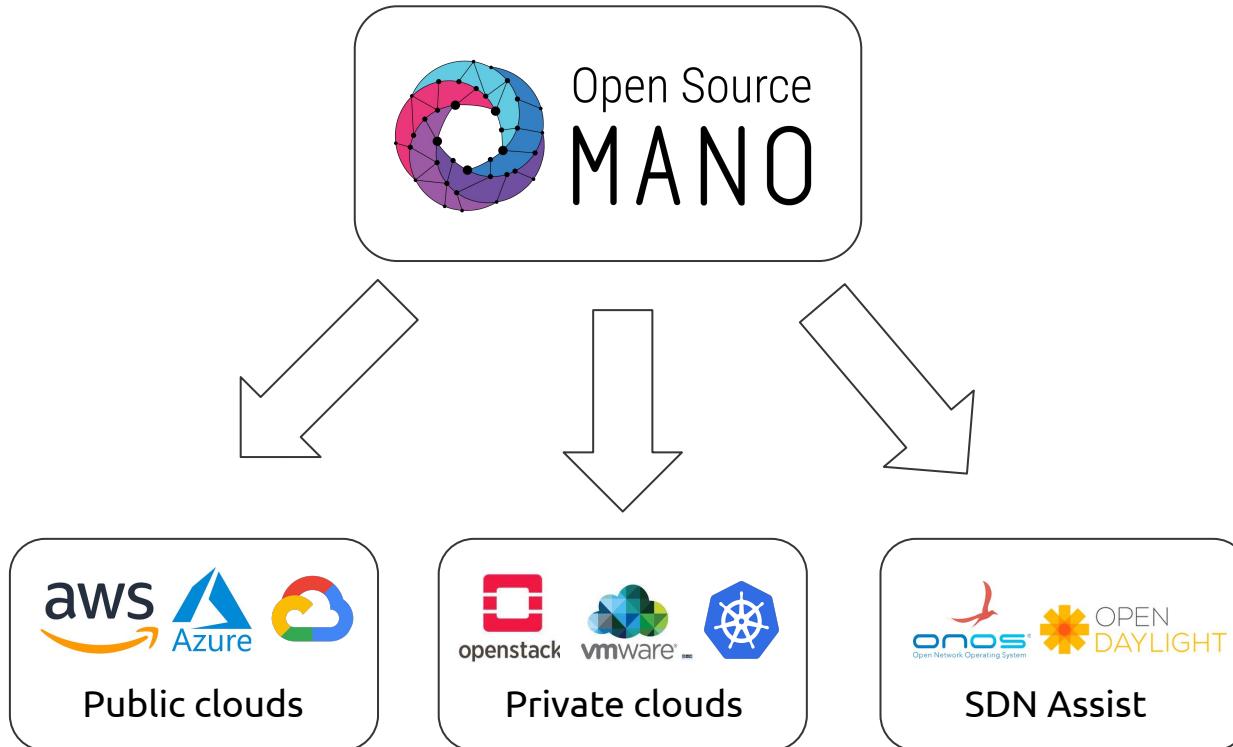
All Bare Metal - Physical network function



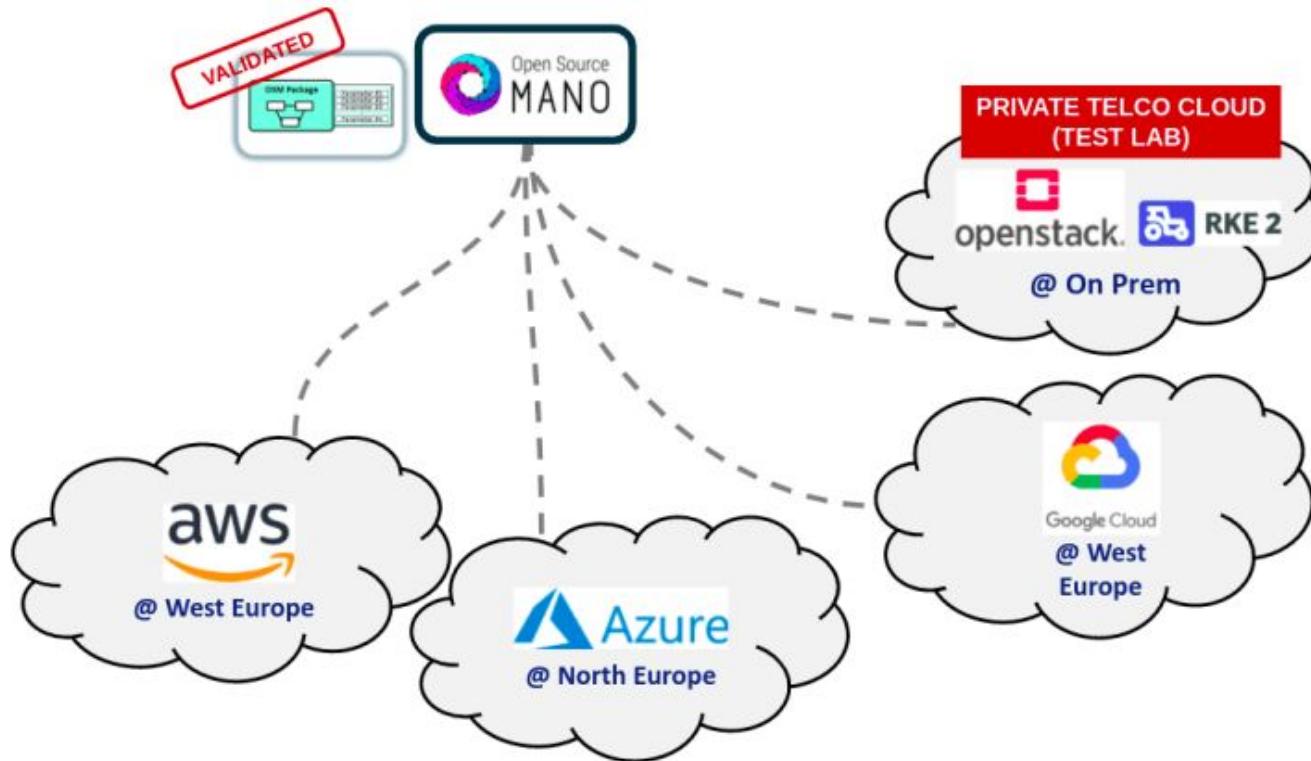
VMs and Containers - Hybrid network function



Multi- VIM support

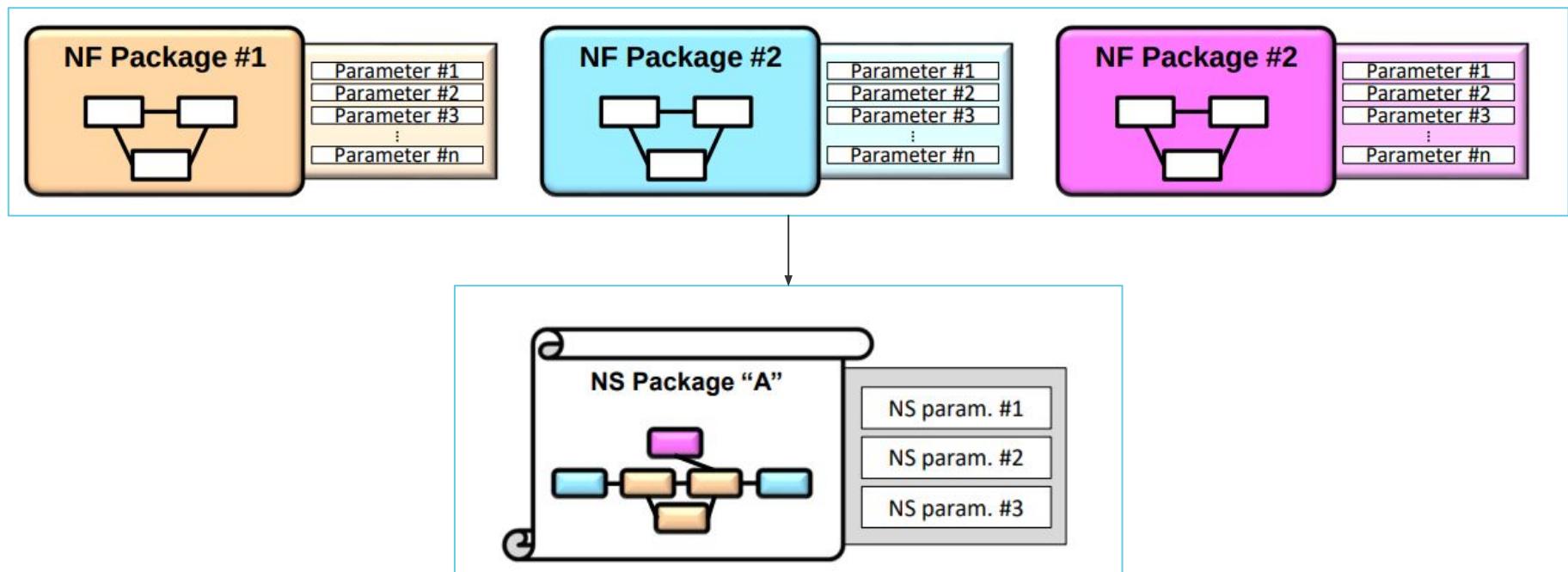


Multi cloud orchestration



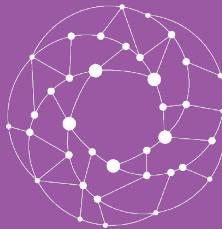
How this is possible?

Parameterized topologies and day1, day 2 operations



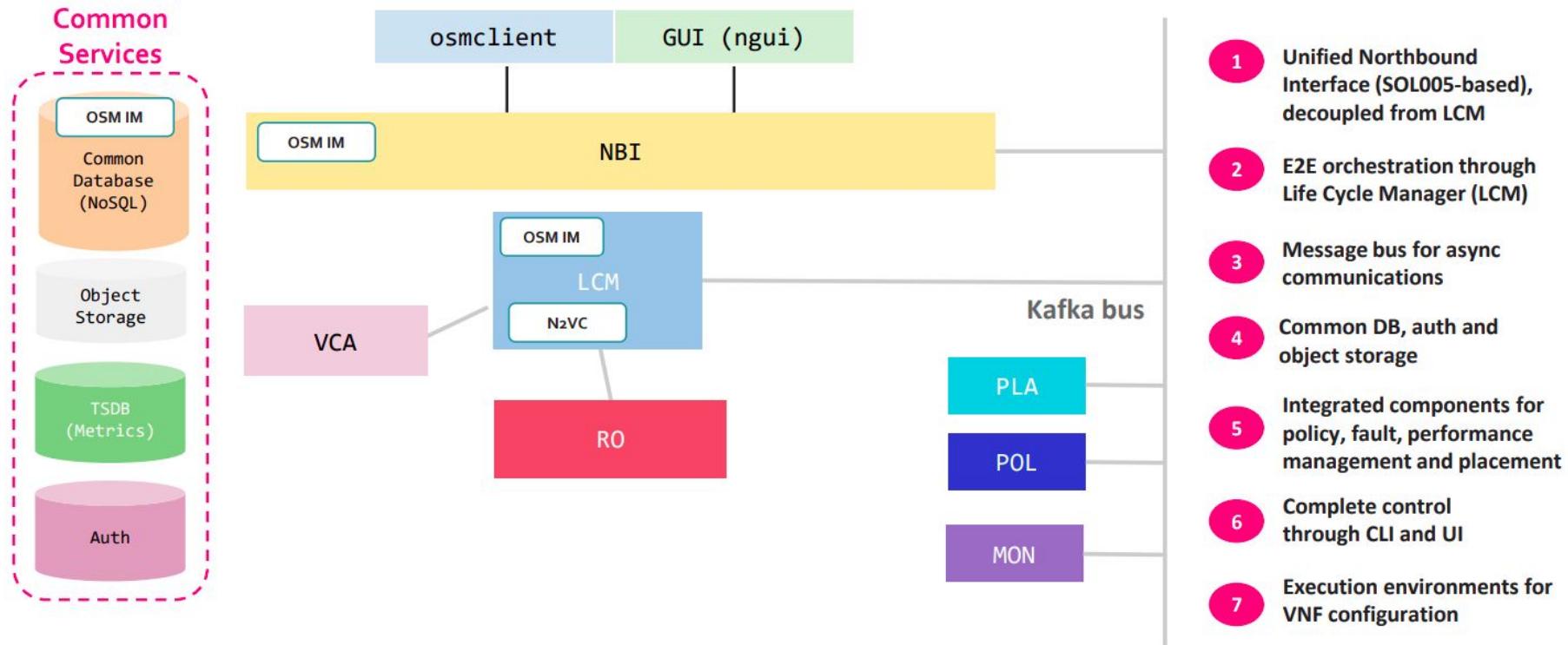
Juju- Generic VNF Manager

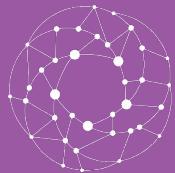




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OSM Architecture

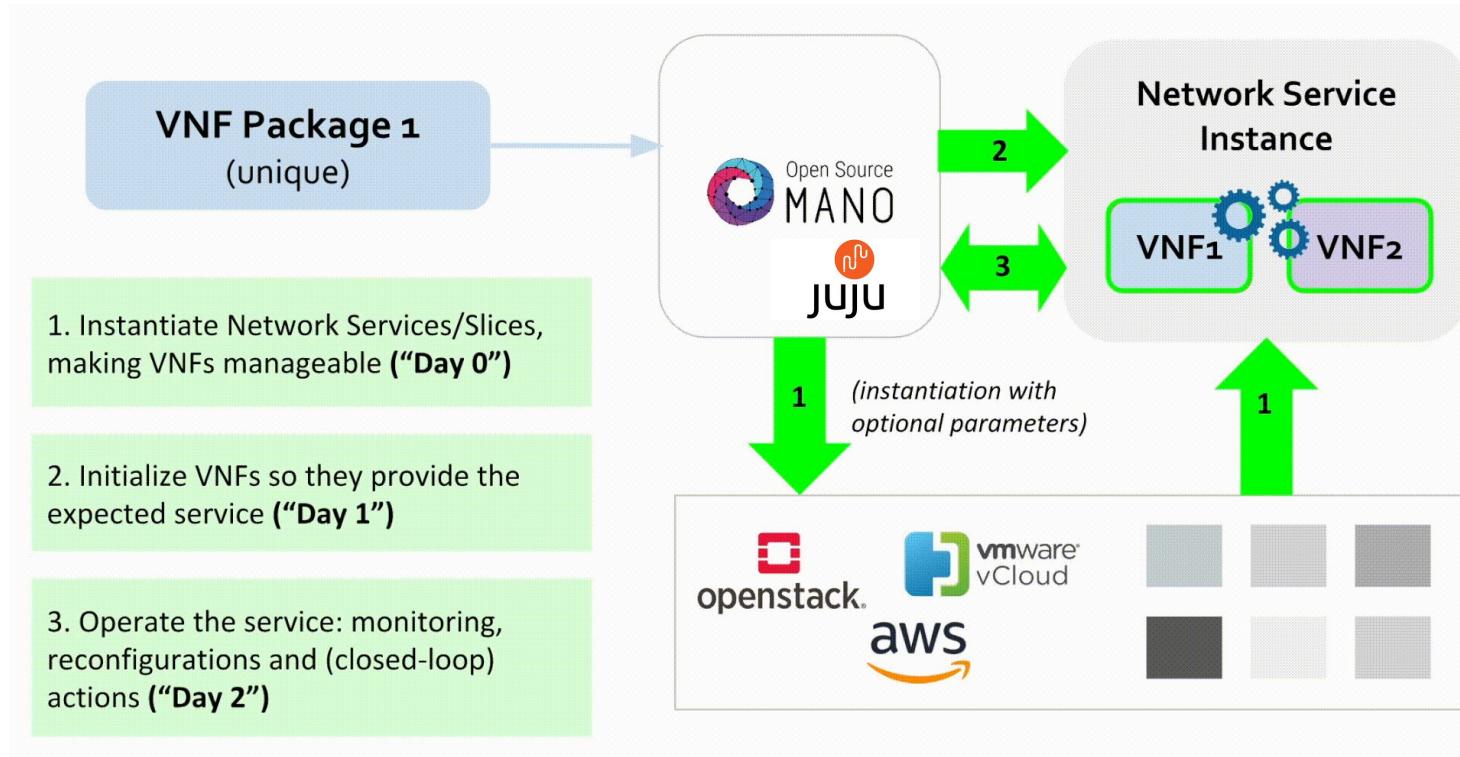


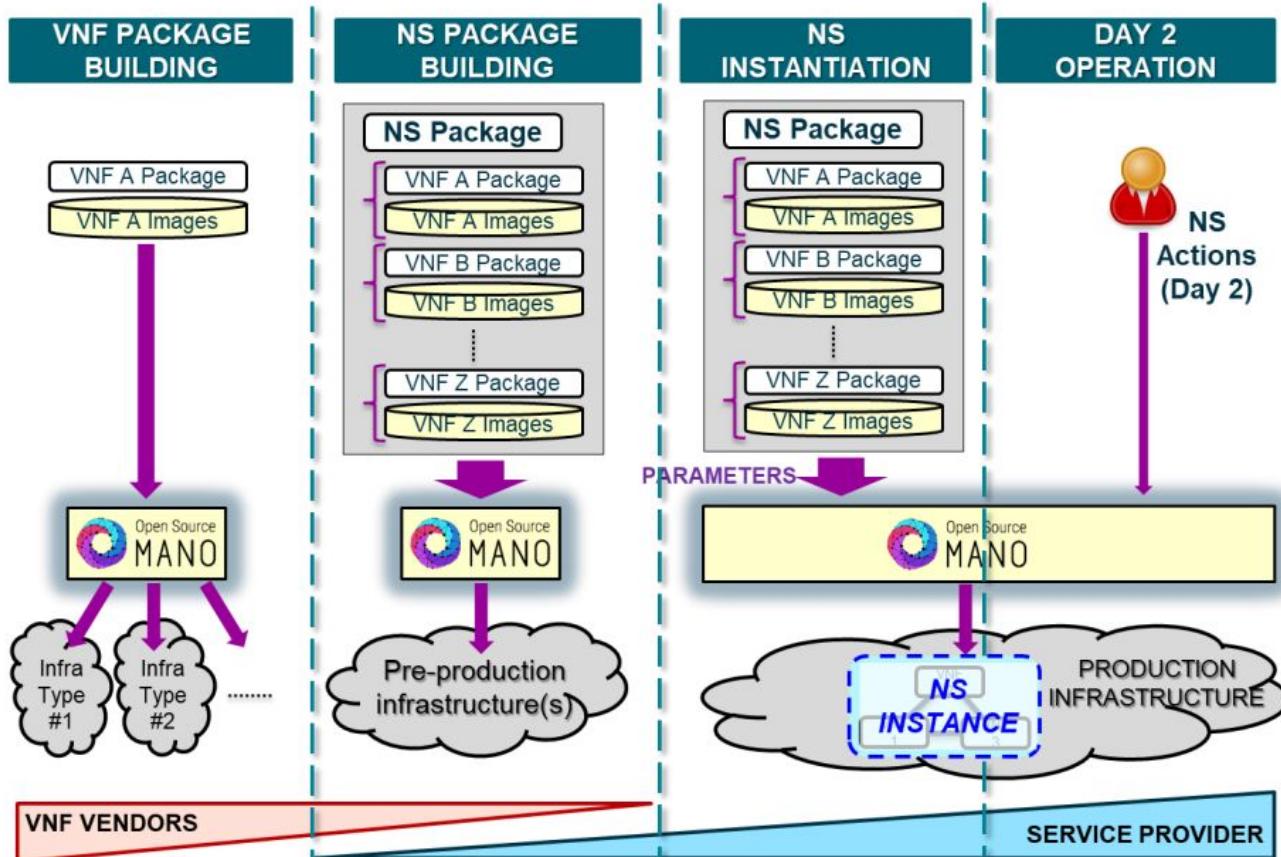


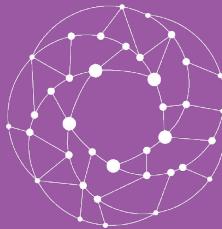
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Automated onboarding process

- Step 0: VNF/NS Packaging
- Step 1: Network service instantiation - Day 0 configurations
- Step 2: Network service initialization - Day 1 configurations
- Step 3: Network service reconfiguration - Day 2 configurations







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OSM Community and Ecosystem

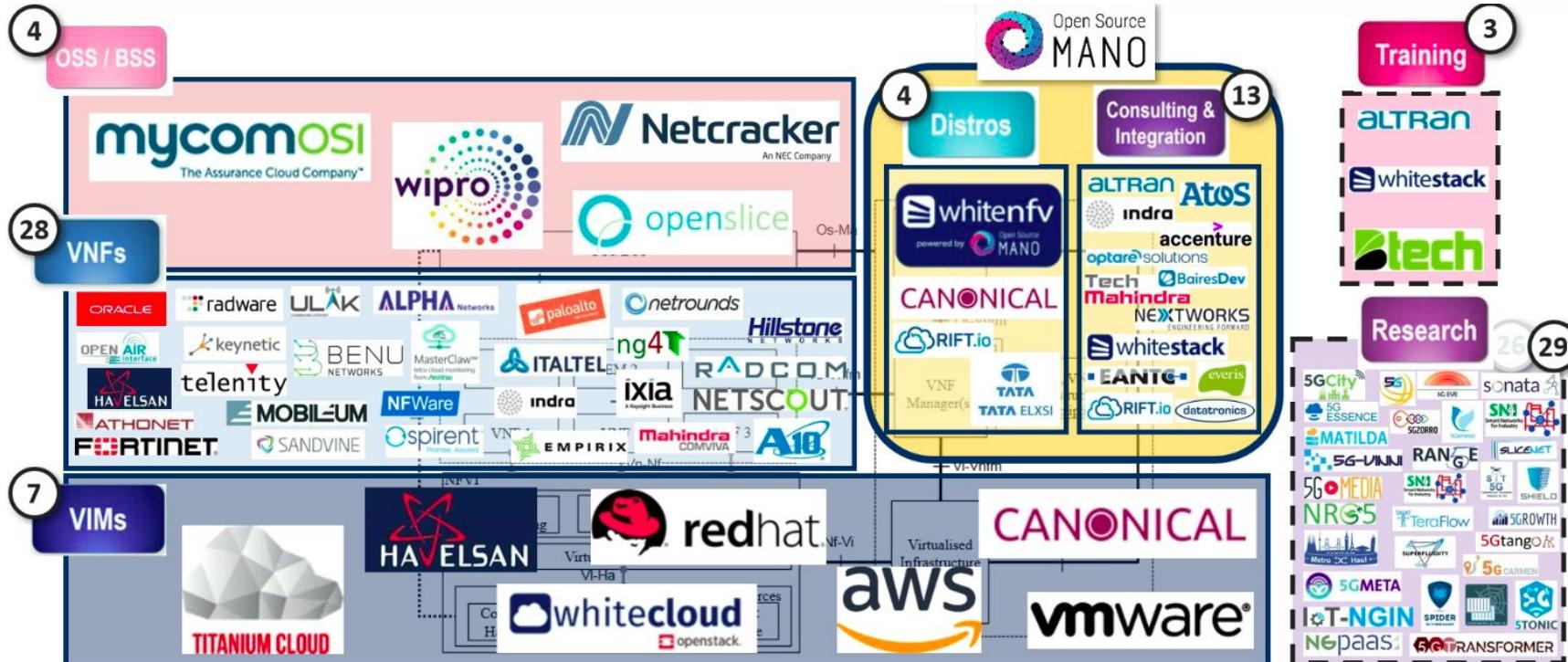
OSM community is really **LARGE AND DIVERSE**, with **148** members today



- 15 Global Service Providers
 - Leading IT/Cloud players
 - VNF providers



OSM Ecosystem



OSM commercial distributions

[Charmed OSM](#)

CANONICAL

[RiftWare](#)

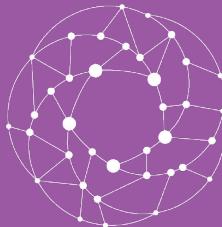


[TeOSM](#)



[WhiteNFV](#)





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OSM Releases and Events

Latest Releases

Release ELEVEN



- SOL004 and SOL007 package formats
- Brand-new support for Google Cloud
- Fine-grained operations in CNFs
- Better coordination across PNFs, VNFs, and CNFs
- CNF monitoring from Kubernetes metrics
- Enhanced installation process

Release TWELVE

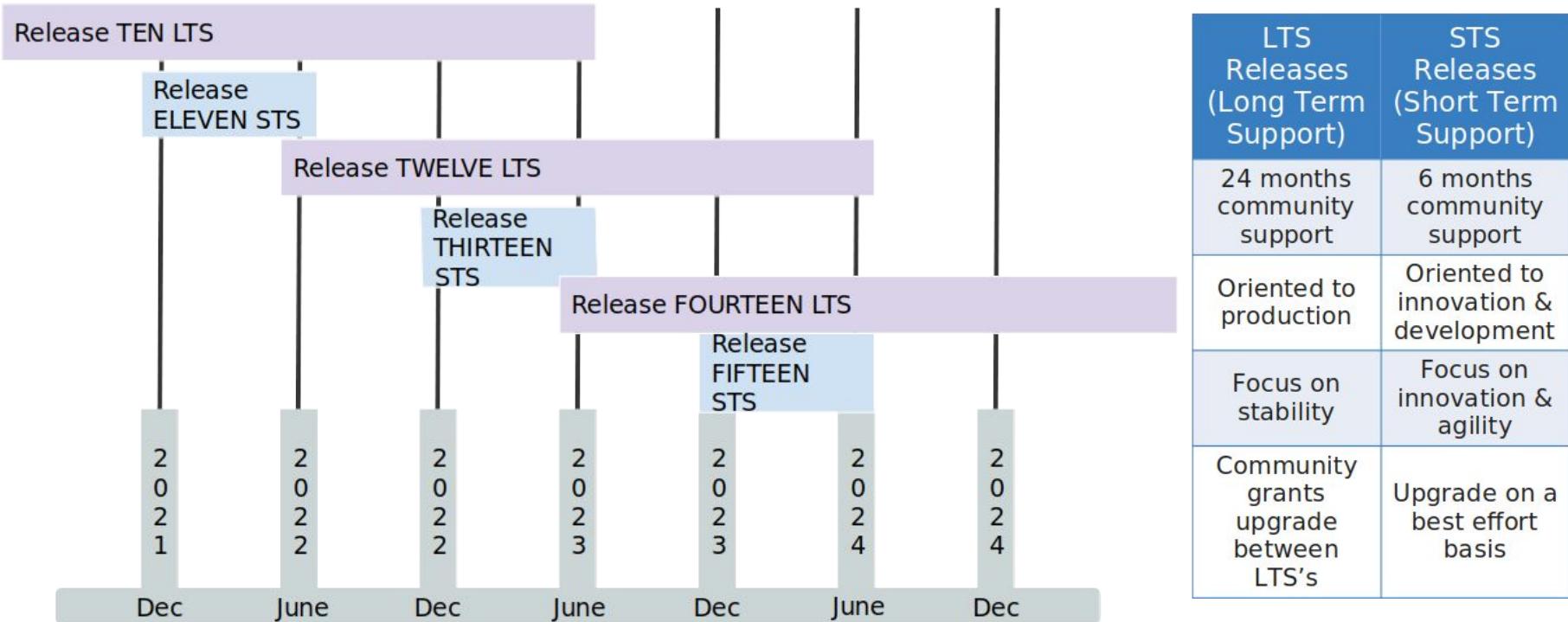


- NF Healing (VDU healing, auto-healing)
- SOL003 support as G-VNFM
- Upgrade of charms and primitives
- Additional support for Anti-Affinity
- Extensions for CNF/K8s support
- Password security



Google Cloud

LTS for OSM



OSM Events

Hackfests

- OSM#12 Hackfest - Remote
- OSM-MR#11 Hackfest - Remote
- OSM#11 Hackfest - Remote
- OSM-MR#10 Hackfest - Remote
- OSM#10 Hackfest - Remote
- OSM-MR#9 Hackfest - Remote
- OSM#9 Hackfest - Remote
- OSM-MR#8 Hackfest - Remote
- 8th OSM Hackfest - Lucca (Italy)
- 7th OSM Hackfest - Patras (Greece)
- 6th OSM Hackfest - Santa Clara (CA, USA)
- 5th OSM Hackfest - Barcelona (Spain)
- 4th OSM Hackfest - Palo Alto (CA, USA)
- 3rd OSM Hackfest - Oslo (Norway)
- 2nd OSM Hackfest - Madrid (Spain)
- 1st OSM Hackfest - Sophia Antipolis (France)

Ecosystem days

- OSM-MR#12 Ecosystem Day 2022
- OSM#12 Ecosystem Day November 2021
- OSM-MR#10 Ecosystem Day March 2021
- OSM#10 Ecosystem Day December 2020
- OSM-MR#9 Ecosystem Day September 2020
- OSM#9 Ecosystem Day June 2020
- OSM-MR#8 Ecosystem Day March 2020



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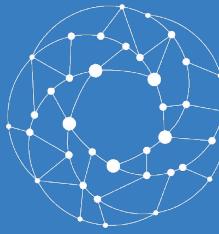
K8s installer

```
wget  
https://osm-download.etsi.org/ftp/osm-11.0-eleven/install_osm.sh  
chmod +x install_osm.sh  
./install_osm.sh
```

Charmed installer

```
wget  
https://osm-download.etsi.org/ftp/osm-11.0-eleven/install_osm.sh  
chmod +x install_osm.sh  
./install_osm.sh --charmed
```

Try yourself !!



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Thank you
Questions?