

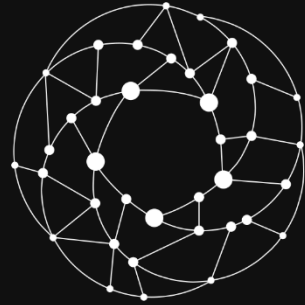
Open Source
MANO

OSM Release EIGHT

Overview & Demos

Francisco-Javier Ramón (Telefónica, ETSI OSM Chair)
Guillermo Calviño (Canonical)
Gianpietro Lavado (WhiteStack)



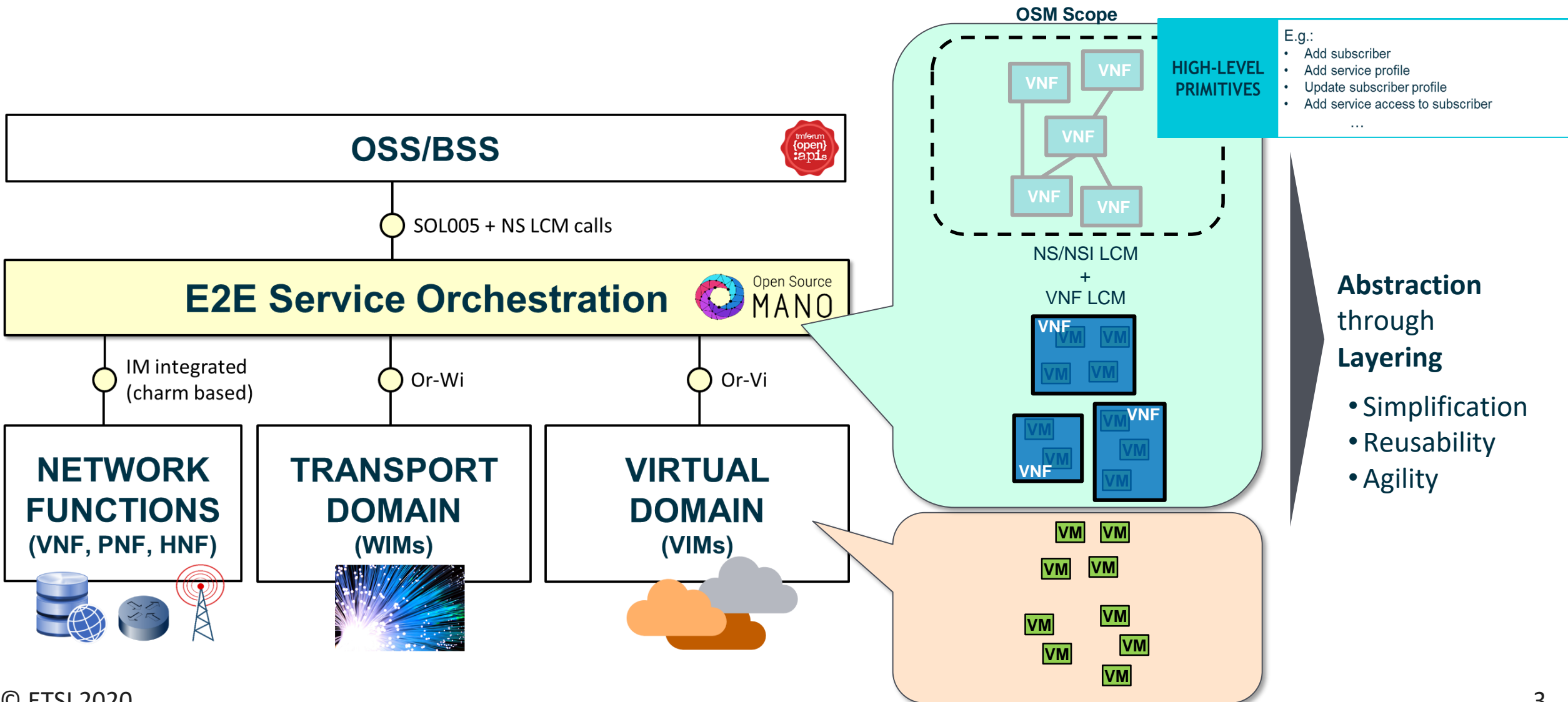


Open Source
MANO

Understanding
what OSM
provides

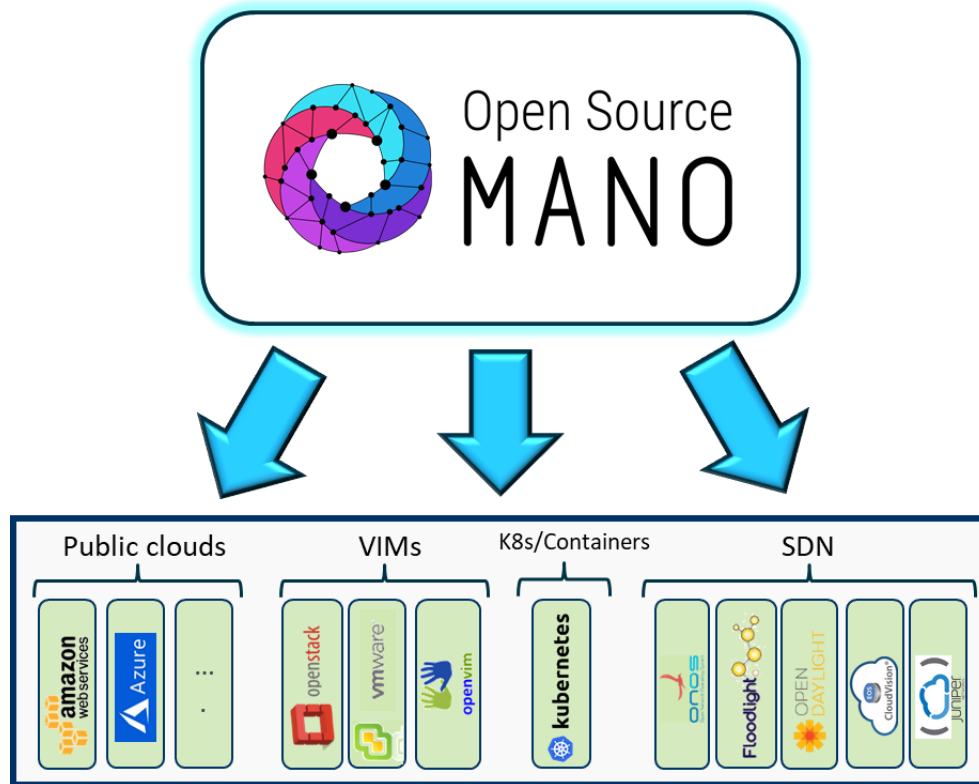


OSM provides a platform to create **Networks as a Service** and to manage them conveniently later

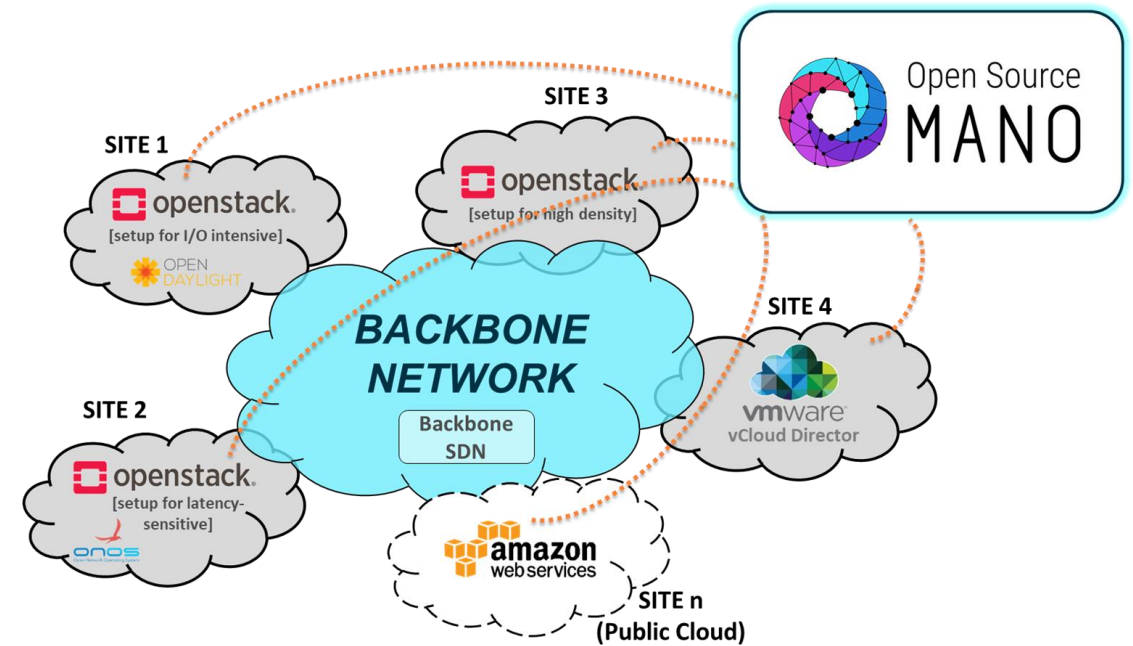


... on different types of infrastructure and across different locations...

MULTI-VIM & MULTI-SDN

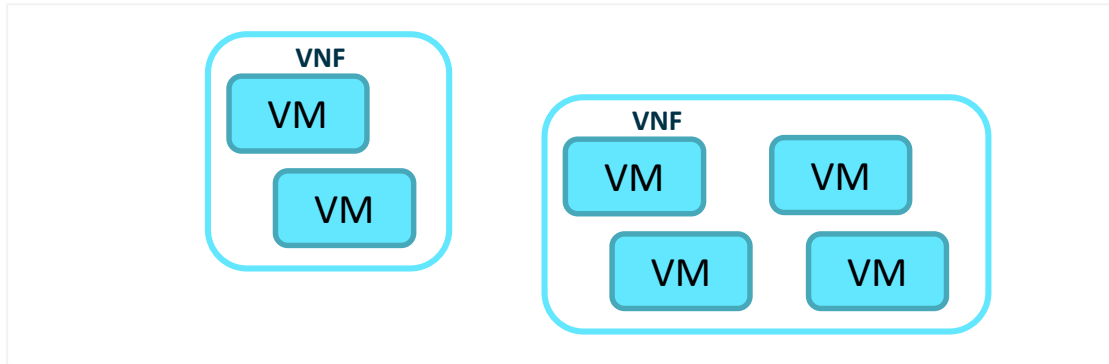


MULTI-SITE

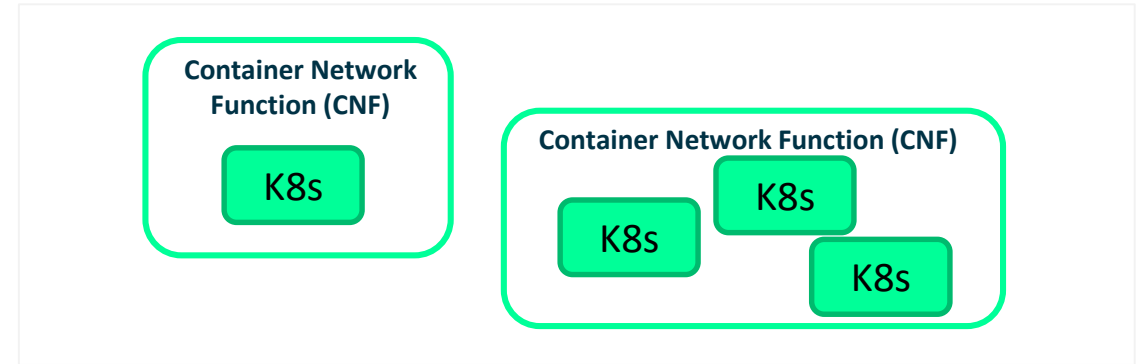


... with VNFs composed of VMs, containers and/or physical elements...

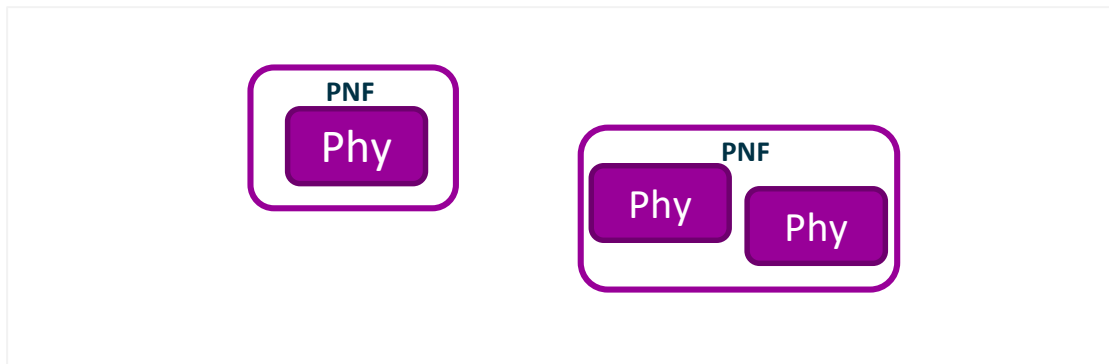
a) All VMs



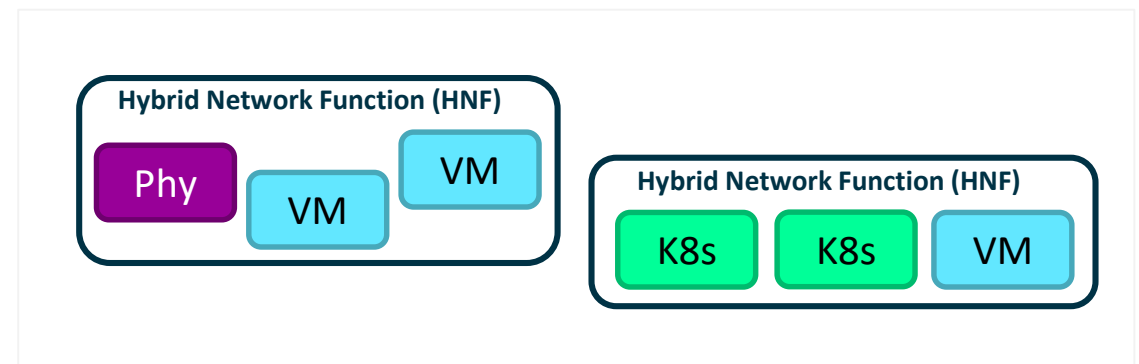
b) All Containers



c) All Physical

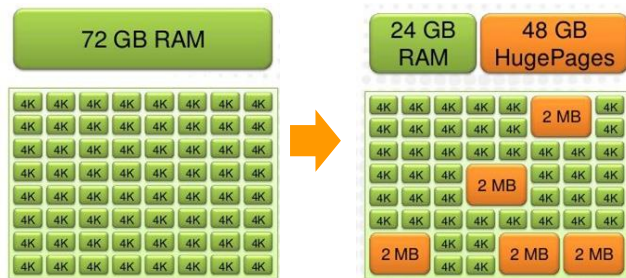


d) Hybrid cases

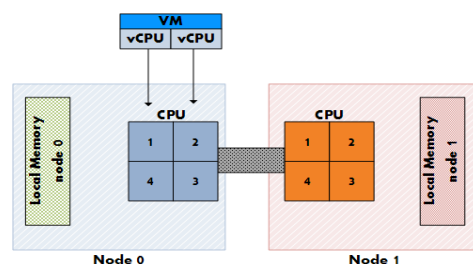


... and ready for network-specific workloads whenever needed

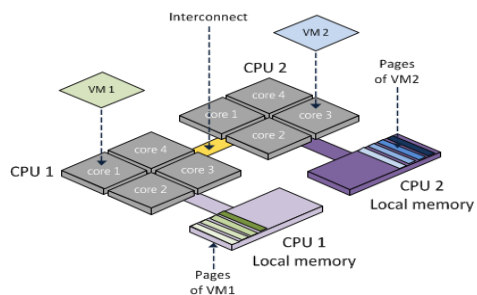
Huge Pages



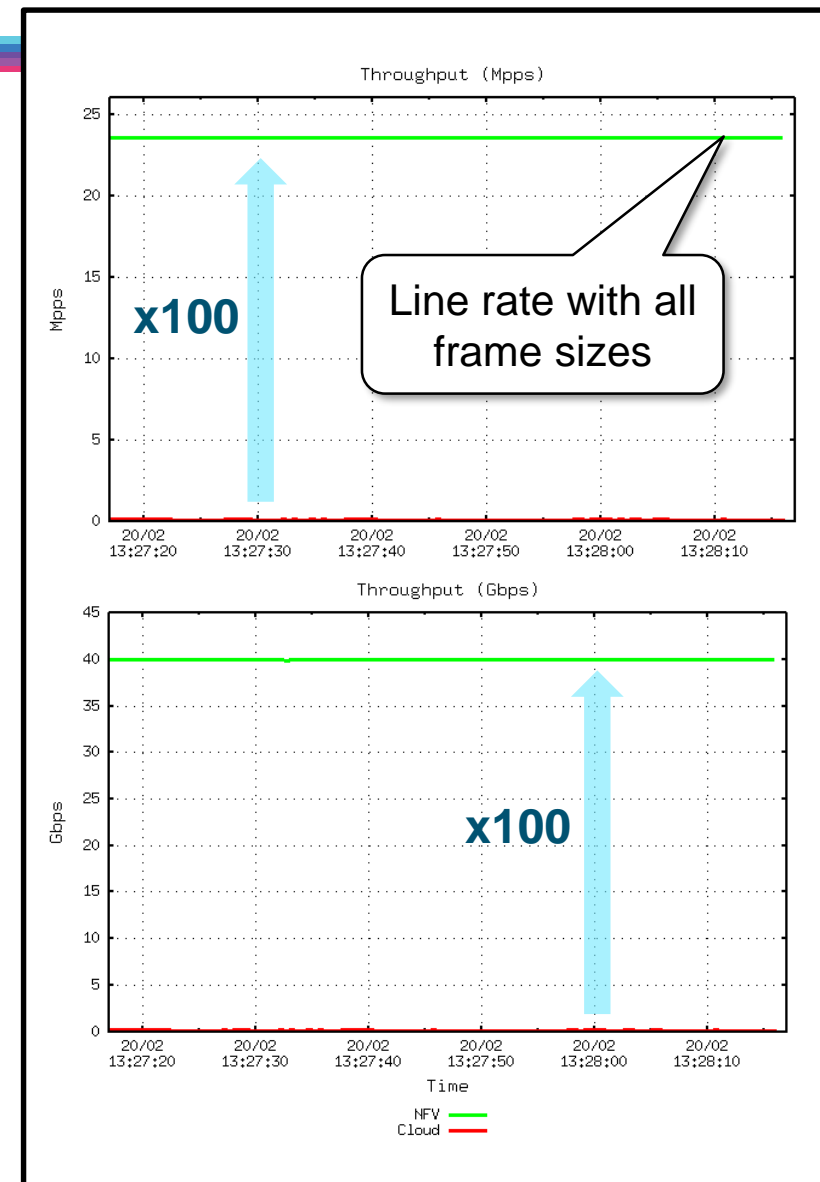
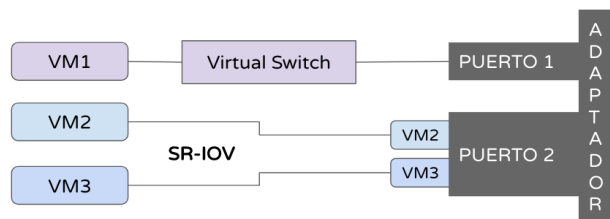
NUMA Topology Awareness



CPU Pinning

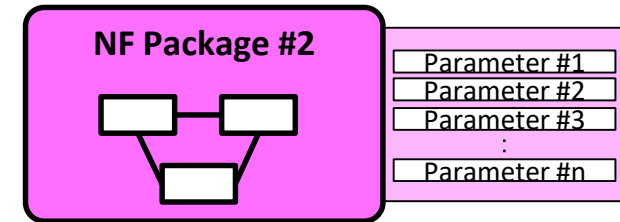
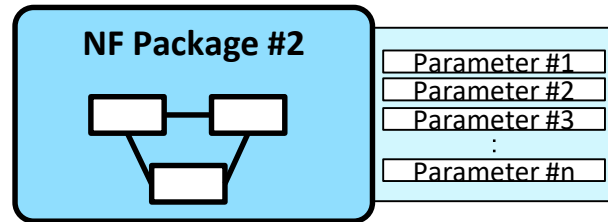
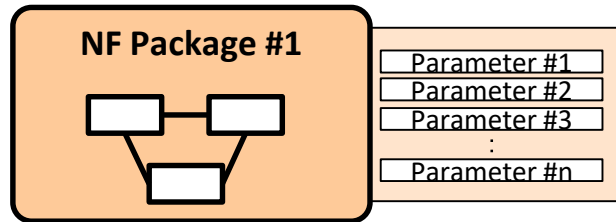


Data Plane assignment



All in OSM is model-driven to make VNFs and scenarios as portable and reusable as possible

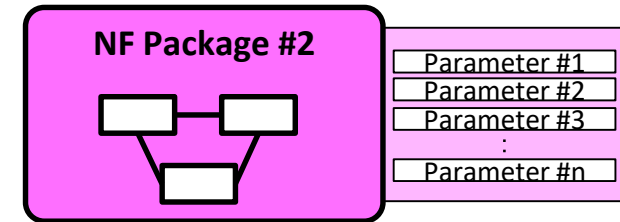
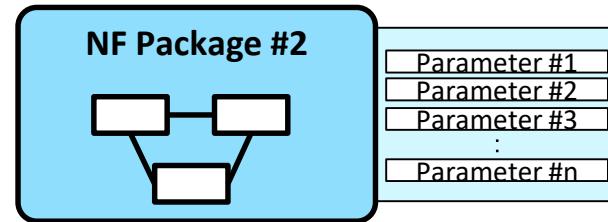
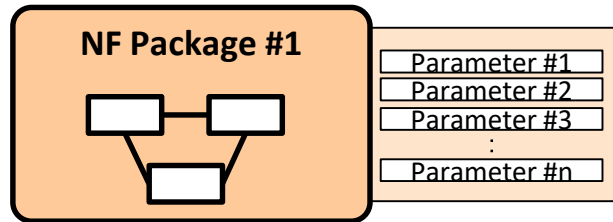
(V)NF PACKAGES:



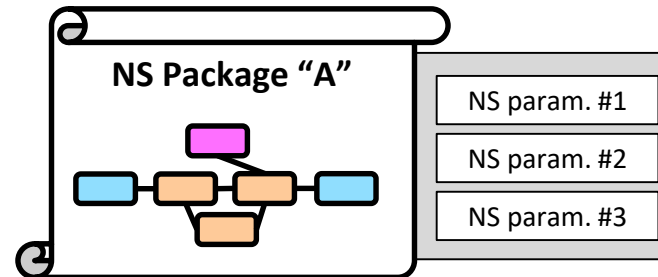
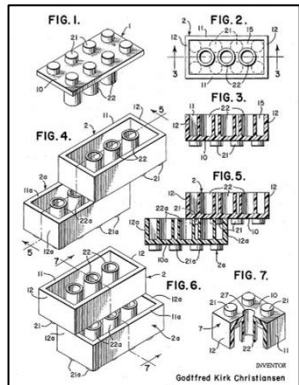
- **Provided by the vendor**, fully describe their own product:
 - Topology
 - Parametrized
 - Actions for Day-0, Day-1, and Day-2
- **Doesn't** need to know any detail about :
 - The target infrastructure
 - Other components that will be part of the scenario

All in OSM is model-driven to make VNFs and scenarios as portable and reusable as possible

(V)NF PACKAGES:



NS PACKAGES / SLICE PACKAGES:

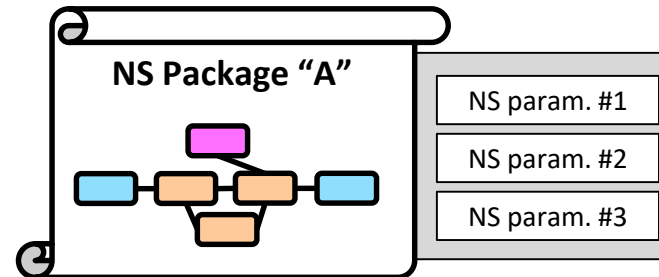
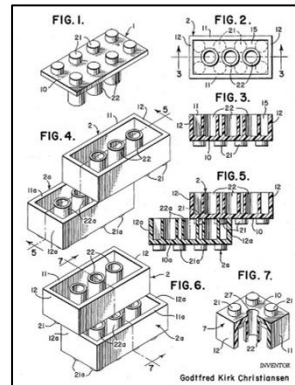


Slice Packages work similarly, but using NS as building blocks^()*

^(*) NS instances play the role of Slice Subnets of a given slice. Some of them may be shared by more than one slice instance. This is taken into account by OSM, so a slice is more sophisticated than just a "NS of NS".

All in OSM is model-driven to make VNFs and scenarios as portable and reusable as possible

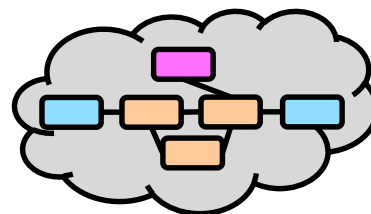
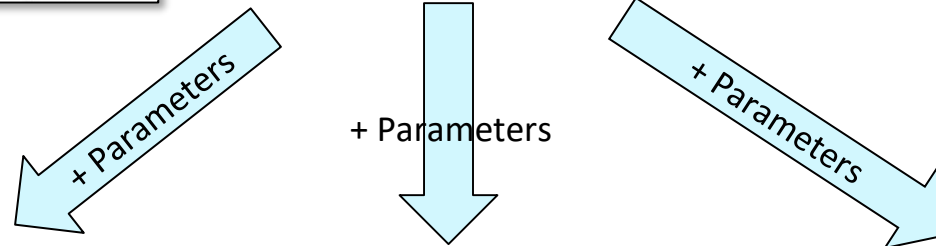
NS PACKAGES / SLICE PACKAGES:



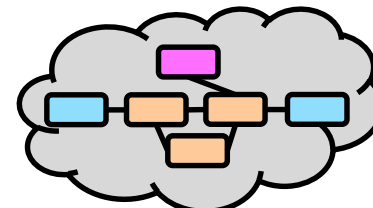
Upon instantiation, you just need to decide:

- The target VIM (or VIMs)
- Values for the parameters (IP addresses, keys, etc.)

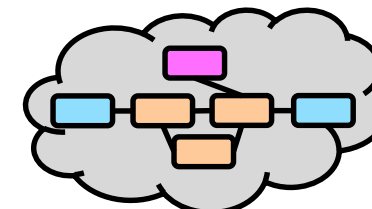
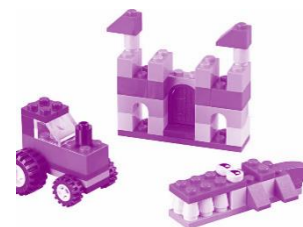
DEPLOYED INSTANCES:



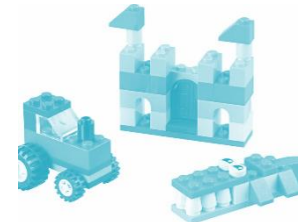
*Instance #1
based on NS "A"*



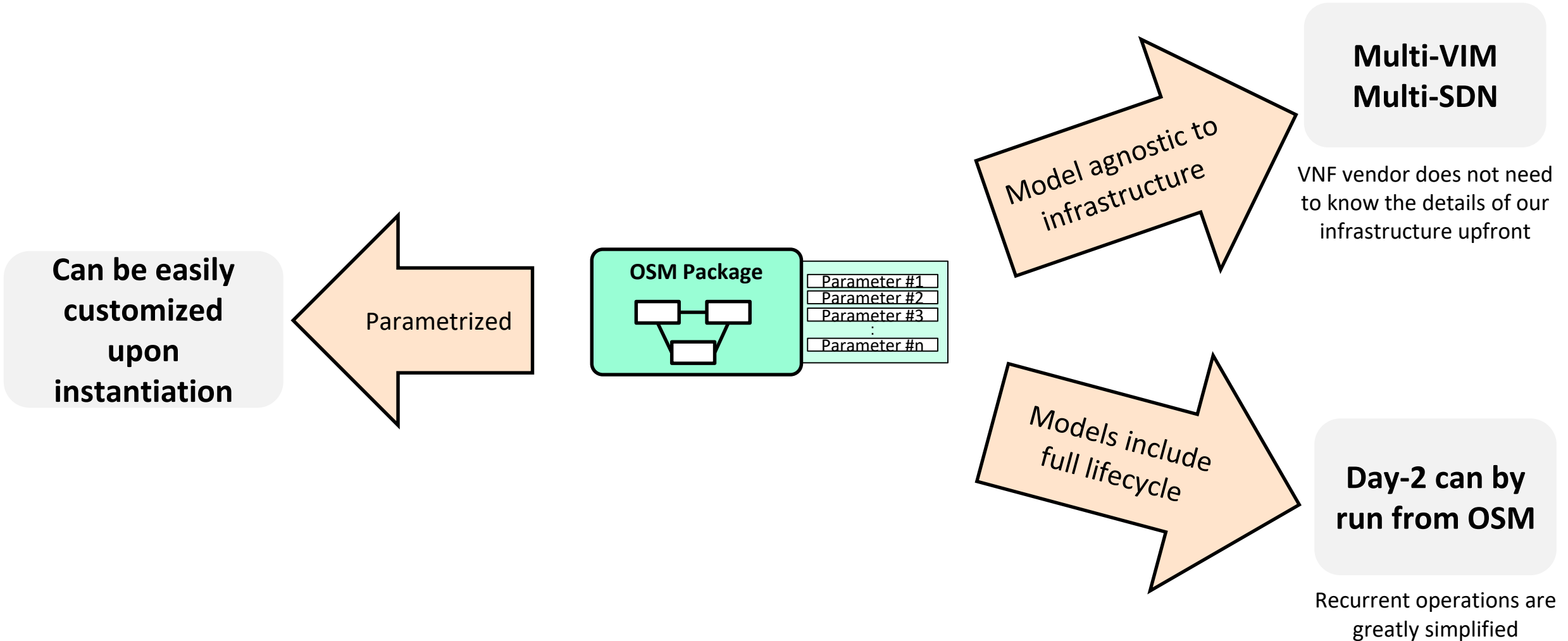
*Instance #2
based on NS "A"*



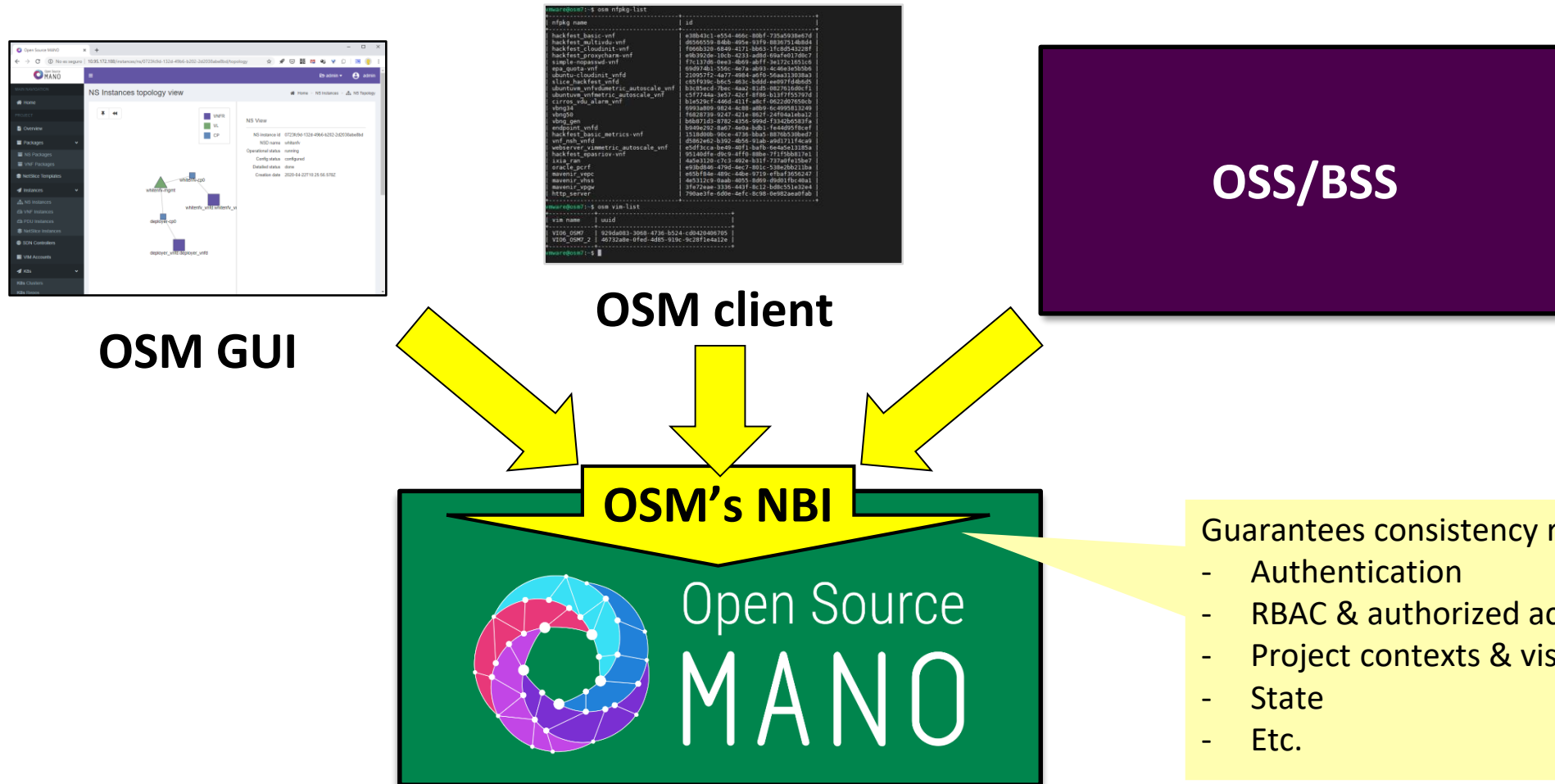
*Instance #3
based on NS "A"*



All these OSM packages are oriented to maximize reusability for multiple scenarios



OSM is used by its Northbound Interface



Release EIGHT gives brings key features to maximize resilience & ease operation at scale



Catalogue of VNF/NS Packages

- VNF repositories



Improved usability

- New angular-based GUI



Improved onboarding workflow

- Simplified package development workflow over Git.
- On the fly translation of packages to EPA/non-EPA



Readiness for HA deployments

- VCA readiness for HA deployments
- HA proxy charms



Improved lifecycle and feedback

- RO runtime data in common OSM database.
- Project quotas.



Fault & Performance Management

- VNF indicator collection w/ Prometheus exporters



New installation options

- Charm-based OSM installation
- Ansible-based OSM installation



Multi-VIM and multi-SDN support

- Plugin for Arista CloudVision
- Plugin for Juniper Contrail



Available at:
osm.etsi.org

OSM community is really **LARGE AND DIVERSE**, with **140** members today, but always **OPEN** to new participants



The image shows a world map composed of small dots, with various logos of service providers and companies overlaid on it. A red-bordered box on the right side of the map contains a list of categories:

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

Logos visible on the map include: Videotron, Bell, BT, T-Mobile, CableLabs, Verizon, Amazon Web Services, NOS, PT, Telefonica, STC, SK Telecom, and kt.

Below the map, a large rounded rectangle contains a grid of logos for various other companies and organizations, including:

- ACCEDIAN, accenture, ADLINK, ADVA, altran, AMPLIPHAE, aptira, ABBACOM, ARCTOS LABS, Aricent, AsiaInfo, ASTELLI, AtoS, GENU NETWORKS, big switch
- calsoft, CANONICAL, CEASE, citrix, enit, CIFS, COMARCH, comptel, C-PLANE NETWORKS, CTC*, DATAELI, datatronics, DELLEM, Dialogic, EANTE+, easy global market, ECODE, EMPIRIX
- EnterpriseWeb, EURECOM, everis, EVERYP, flex, Fraunhofer, FUJITSU, Hillstone, hSenidMobile, i2cat, iconectiv, idea, indra, Infoblox, intel
- iricent, keynetic, Kings College London, Lambda Tech Ltd, Lancaster University, LAYER123, MAVENIR, MeadowCom, metaswitch, MOBILUM, mo dio, mycom, 7z*able, DEMOKRITOS
- Netracker, NetNumber, netrounds, NETSCOUT, NEKTWORKS, NFWare, ng4, optare, CRACLE, PacketFront, PADERBORN UNIVERSITY, PENZA, Prodapt, RADCOM, radware, redit, RIFTa
- SANDVINE, SIGMA, SINGSCALE, simulamet, SPIRENT, strikr, TATA, TATA ELXSI, Tech Mahindra, technical, Teck Nexus, Telenor, TNO, UBITECH, ubiwhere, ULAK, UNIBERG
- University of BRISTOL, Universidad Carlos III de Madrid, UCL, UNIVERSITY OF DUISBURG ESSEN, UNIVERSITY OF SURREY, UNIVERSITY OF THESSALY, VIAVI, vmware, whitestack, WIND, wipro, WIRE LABS, FLOW, ZTE

Companies listing their products and offers related to OSM (like “OSM Yellow pages”)

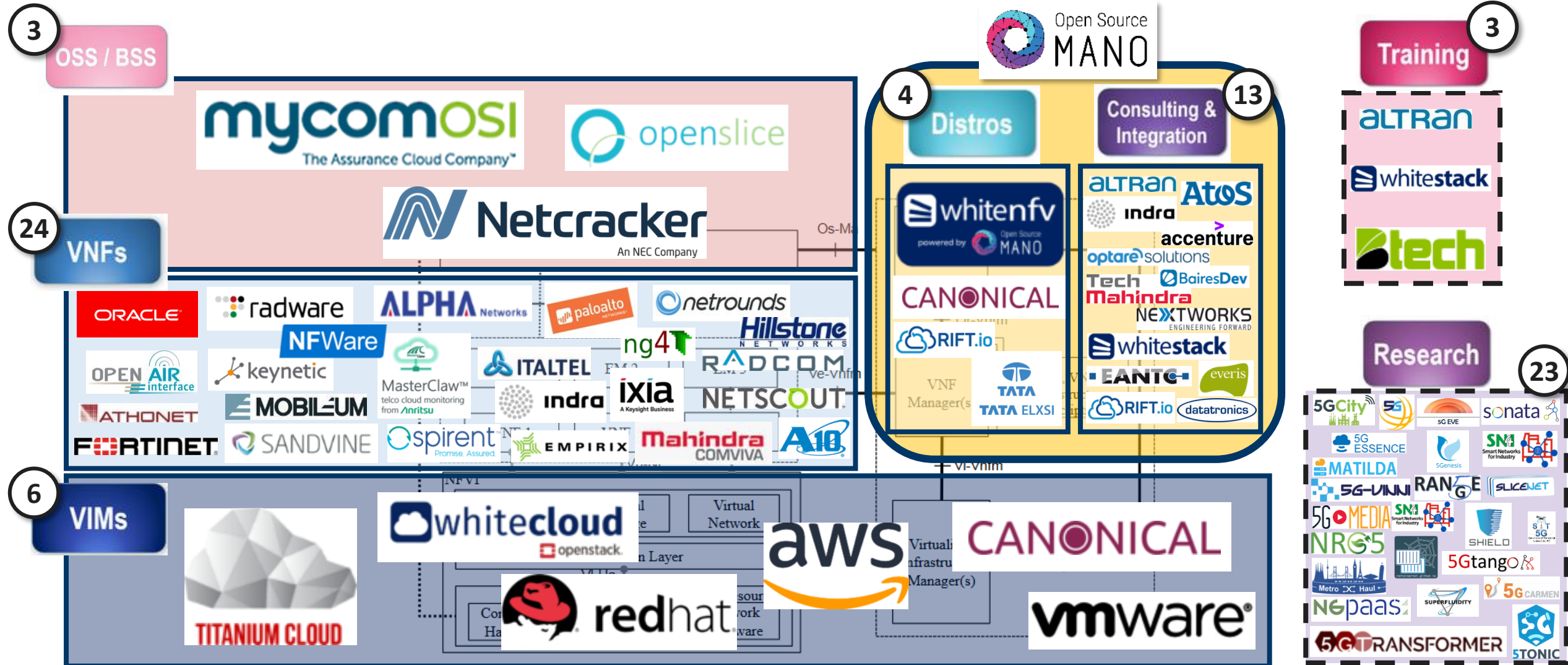
- Searchable by potential customers looking for OSM-related products
- Only with demonstrable OSM-related products/offers
- Opt-in process, continuously open

https://osm.etsi.org/wikipub/index.php/OSM_Ecosystem

OSM Ecosystem

(as of today)

https://osm.etsi.org/wikipub/index.php/OSM_Ecosystem



Overview of the webinar

DEMO #1: OSM System Features in action

by Guillermo Calviño (Canonical)

- High Availability
- Next Generation User Interface
- System Quotas
- System Monitoring

DEMO #2: Network Service Deployment with OSM

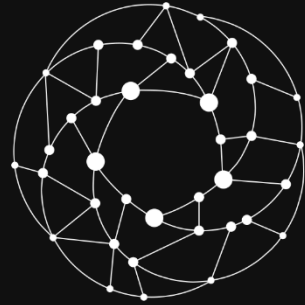
by Gianpietro Lavado (Whitestack)

- VNF Catalog
- Magma EPC Deployment
- High Performance Network Functions

and, if you want to learn even more...

... you can join us to our
upcoming OSM Hackfest!





Open Source MANO

OSM System Features

High Availability

NG-UI

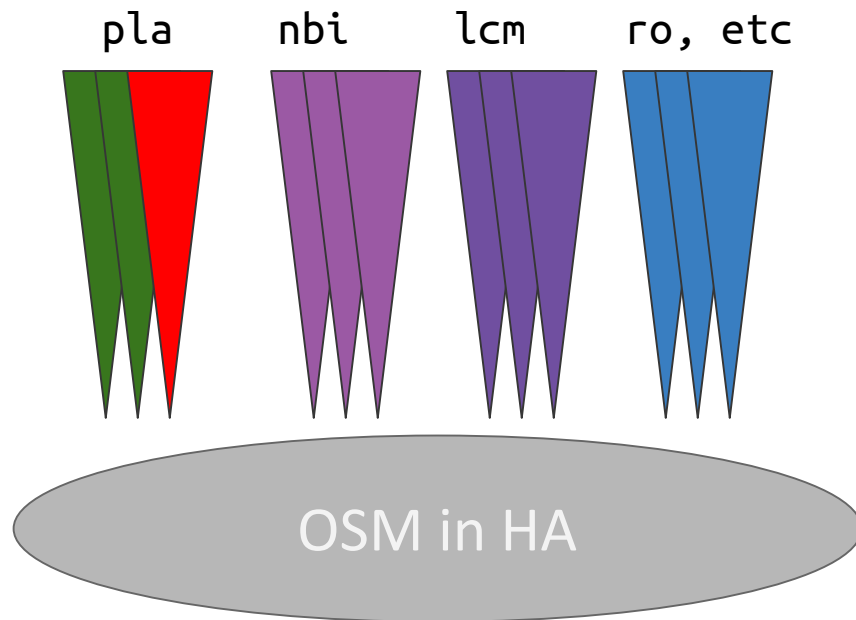
System Quotas

System Monitoring

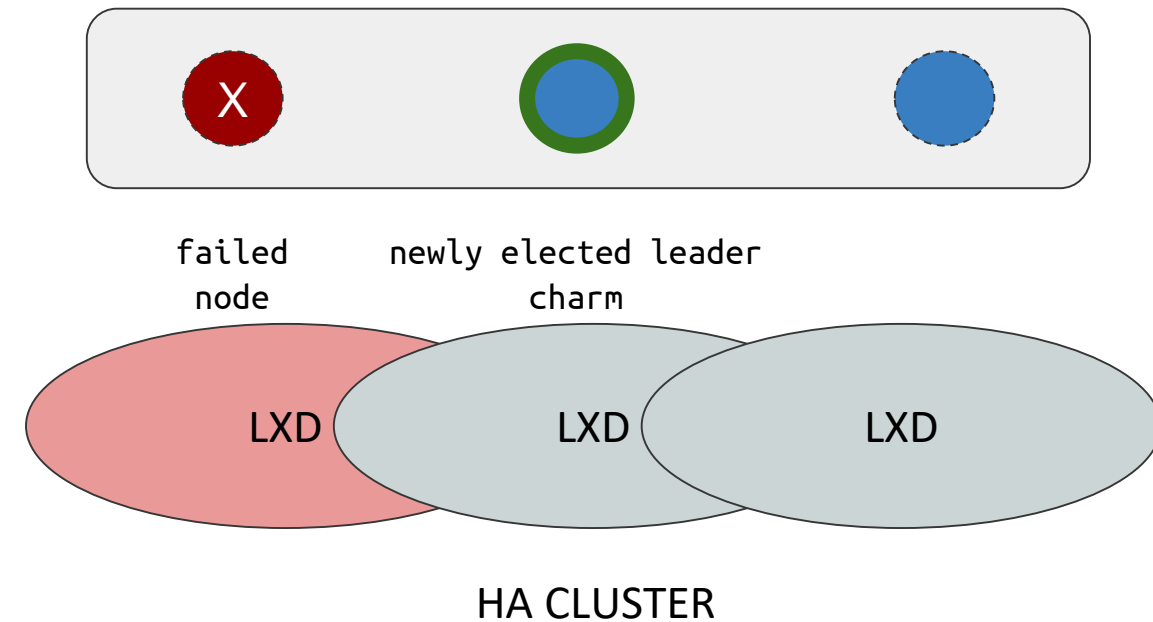


OSM in High Availability: Demo

OSM POD failure



HA Proxy Charms



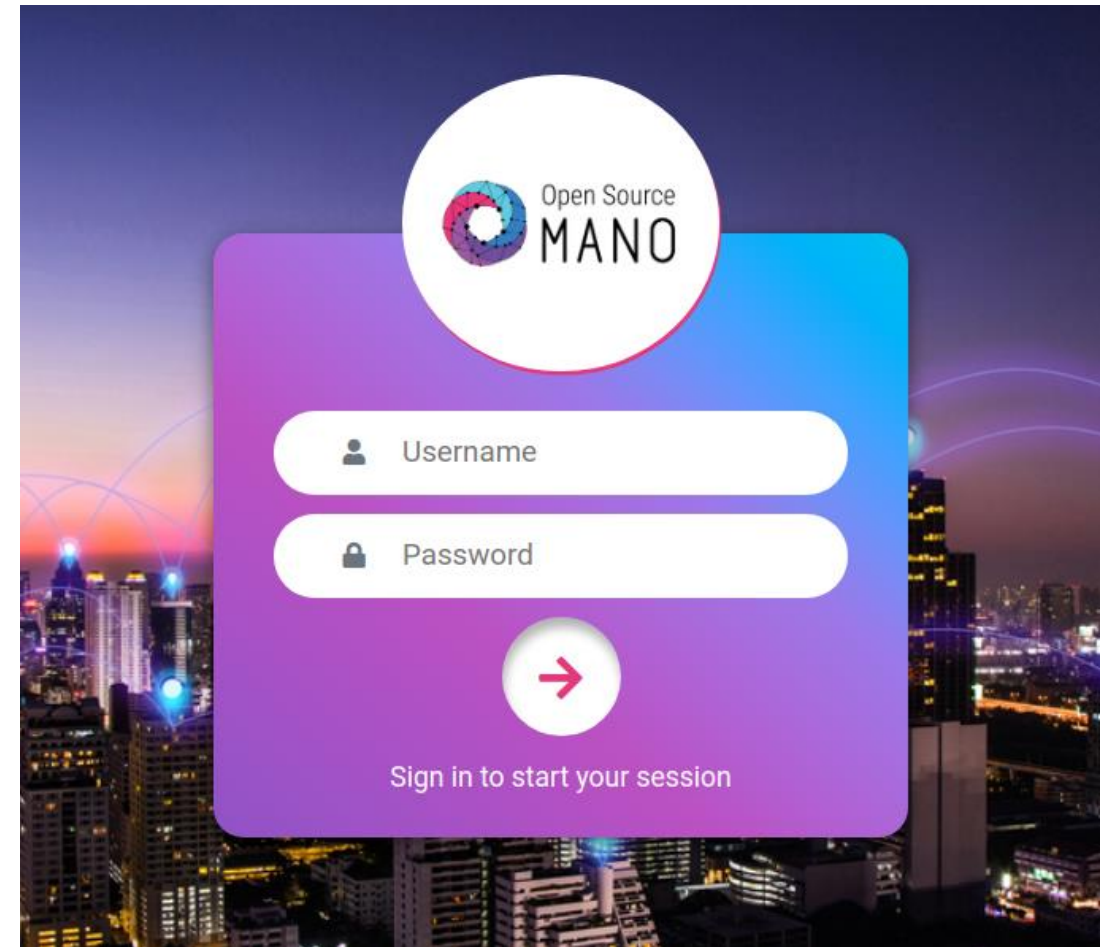
HA built into the **upstream Charmed installer**

```
$ ./install_osm.sh --charmed --ha  
--lxd  
--lxd-cred  
--vca  
--k8s
```

NG-UI: New UI for an improved user experience!



- Available since release 8.0.0
- Multi-language support (English, German, Spanish, Portuguese)
- It can be easily reskin & scalable
- Reduces the manual inputs
- Extensive usage of NBI APIs with RBAC implementation
- New dashboard provides an overview of the application



System Quotas

Edit Project ✕

Mandatory fields are marked with an asterisk (*)

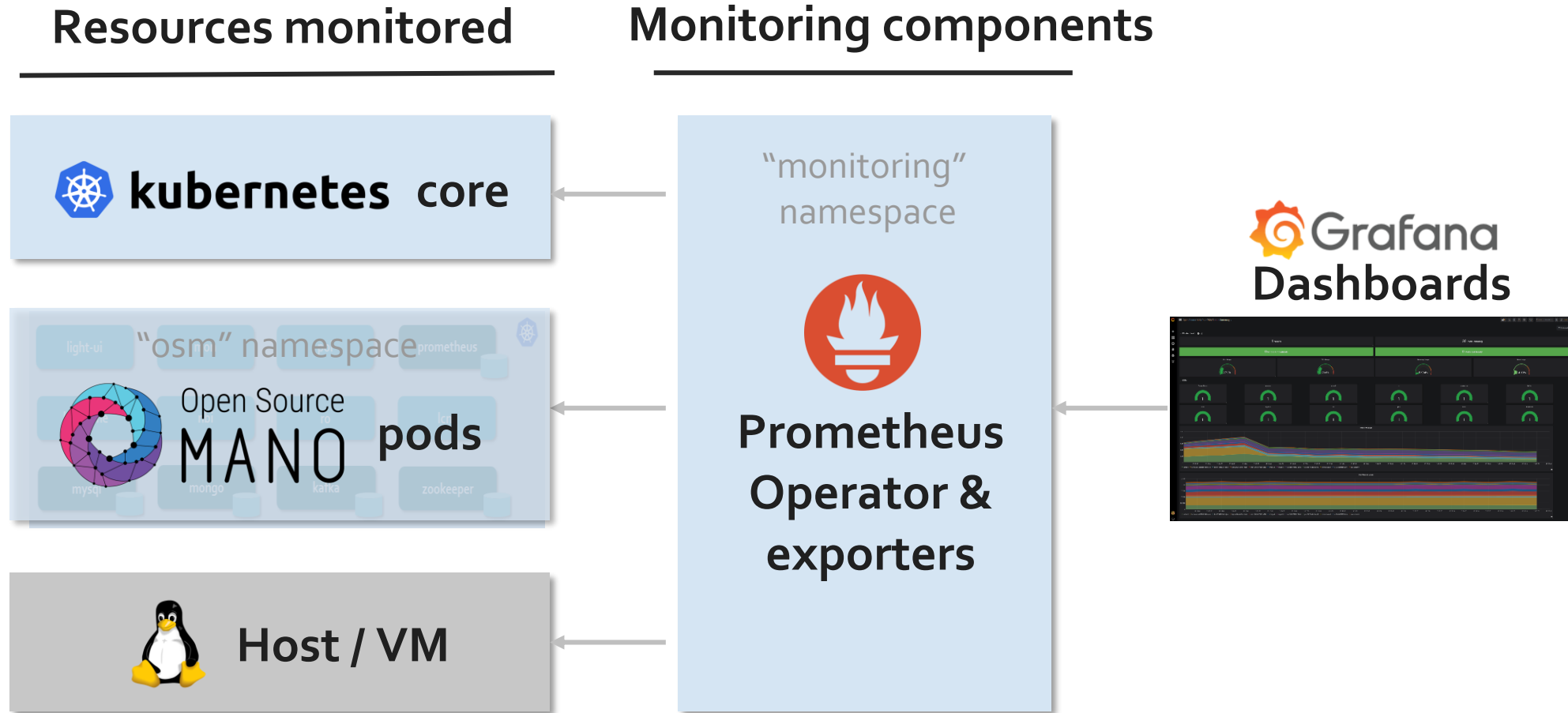
Project Name*

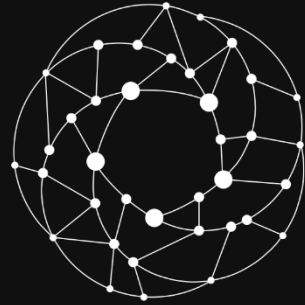
Quota Limit

VNF Packages*	<input type="text" value="0"/>	NS Packages*	<input type="text" value="0"/>
NetSlice Template*	<input type="text" value="0"/>	PDU Instances*	<input type="text" value="0"/>
NS Instances*	<input type="text" value="0"/>	NetSlice Instances*	<input type="text" value="0"/>
VIM Accounts*	<input type="text" value="0"/>	WIM Accounts*	<input type="text" value="0"/>
SDN Controller*	<input type="text" value="0"/>	K8s Clusters*	<input type="text" value="0"/>
K8s Repos*	<input type="text" value="0"/>	OSM Repositories*	<input type="text" value="0"/>

Limit the resources that can be allocated in a project

System Monitoring



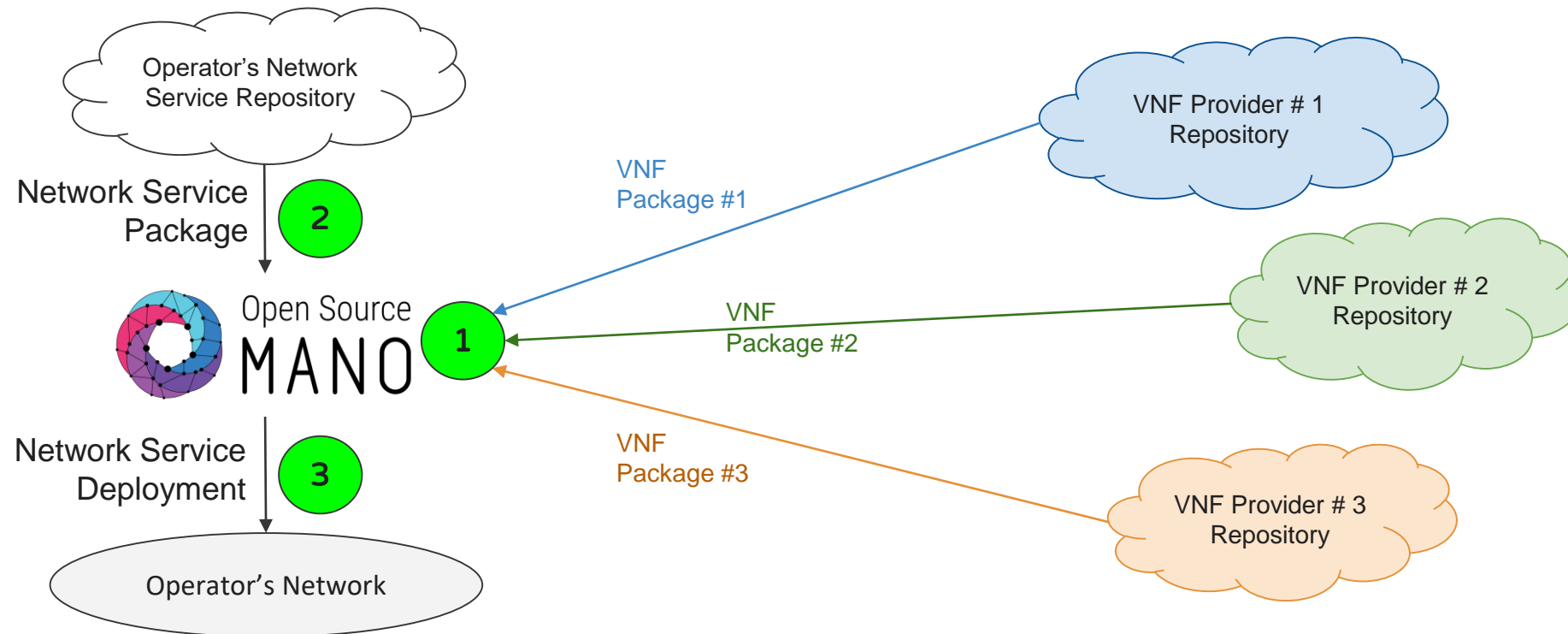


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Network Service Deployment with OSM



OSM VNF Catalogues

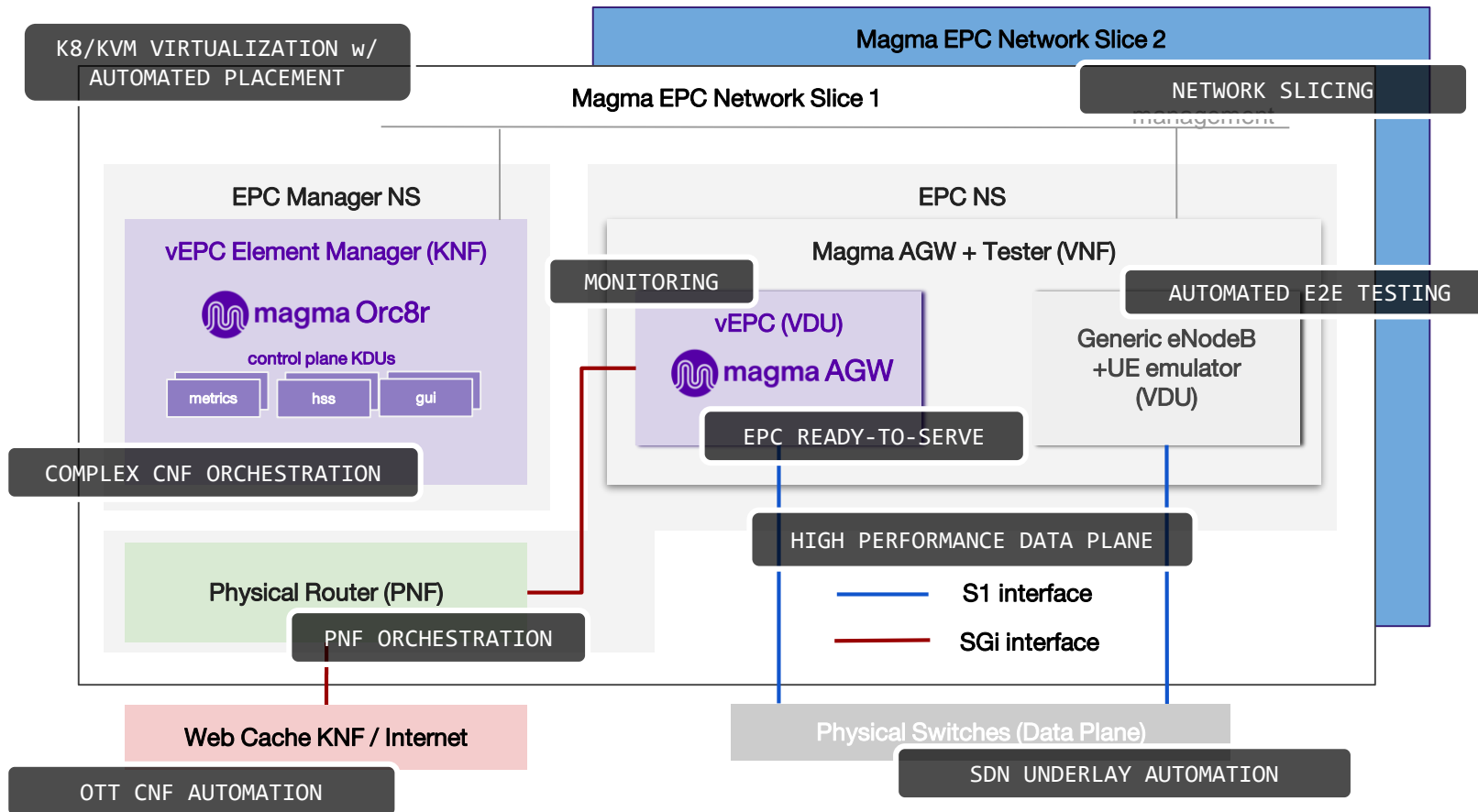


1 Operator onboards VNFs directly from provider's repo

2 Operator onboards own Network Service composed by those VNFs

2 Operator launches the Network Service!

Fully operational EPC in minutes!

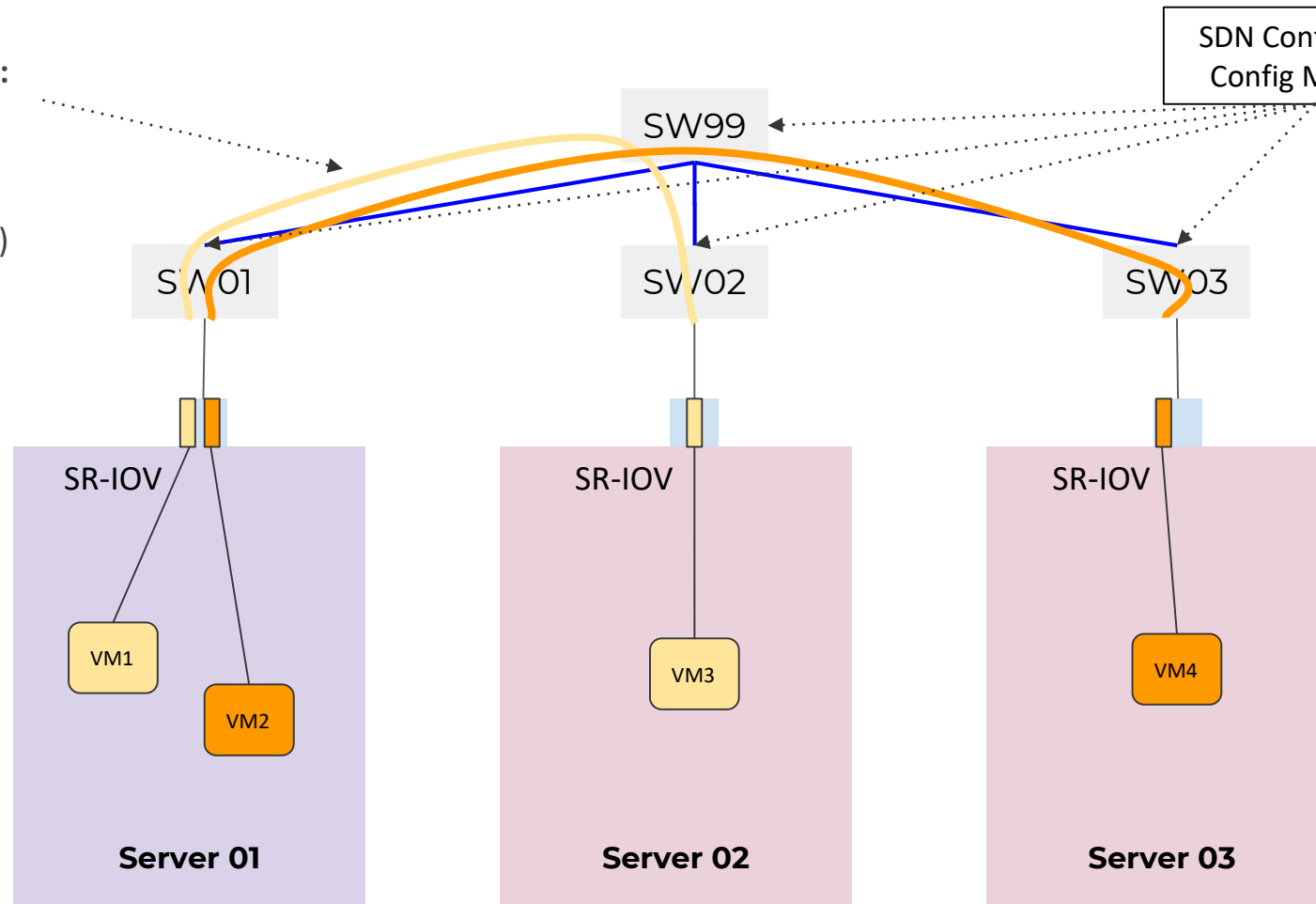


- Docker and VM-based virtualization lifecycle management
- Complex KNF deployment in minutes
- Physical Network Function automation
- VNF Monitoring
- Automatic Horizontal Scaling
- High performance techniques activation
- Underlay network automation
- Network Function Day-0, Day-1 and Day-2 operations
- Network Slicing with shared services

A note on SDN Assist

Automating connectivity between data plane VNFs

Underlay connectivity:
VXLAN, OpenFlow,
VLAN, etc.
(depends on the SDN
Controller or Manager)



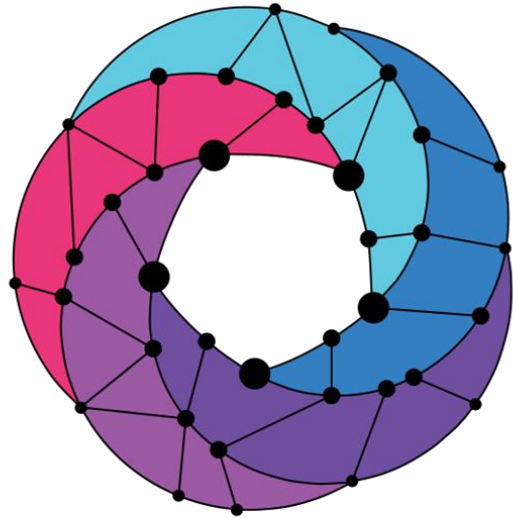
SDN Controller or
Config Manager

OSM's SDN Assist feature takes care of the "underlay" connectivity **whenever it sees VLDs with SR-IOV or PASSTHROUGH ports that need to connect between each other.**

* Supported as of REL8 → Arista, Juniper Contrail, Floodlight, ONOS and Open Daylight

Closing remarks

- **Zero Touch is here!** An end-to-end network service automated deployment is possible with Open Source MANO.
- **NFV MANO is a must!** NFV MANO Orchestration is key to fulfill multi-vendor Hybrid NF onboarding & automation, from instantiation to operations, given the increased modularity and distributed nature of network functions.
- **Rich VNF Onboarding!** OSM Release EIGHT bring rich onboarding possibilities to cover complex use cases like the mobile network functions use case.



Open Source MANO

Find us at:

osm.etsi.org
osm.etsi.org/docs
osm.etsi.org/wikipub

