

Open Source
MANO
by ETSI

Introduction to OSM

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OSM#15

12/06/2023

Some requirements for the evolution of Telco Clouds...

REQUIREMENTS FROM NEW SERVICES

NEXT-GEN TELCO CLOUD





How OSM Simplifies Telco Cloud Management...

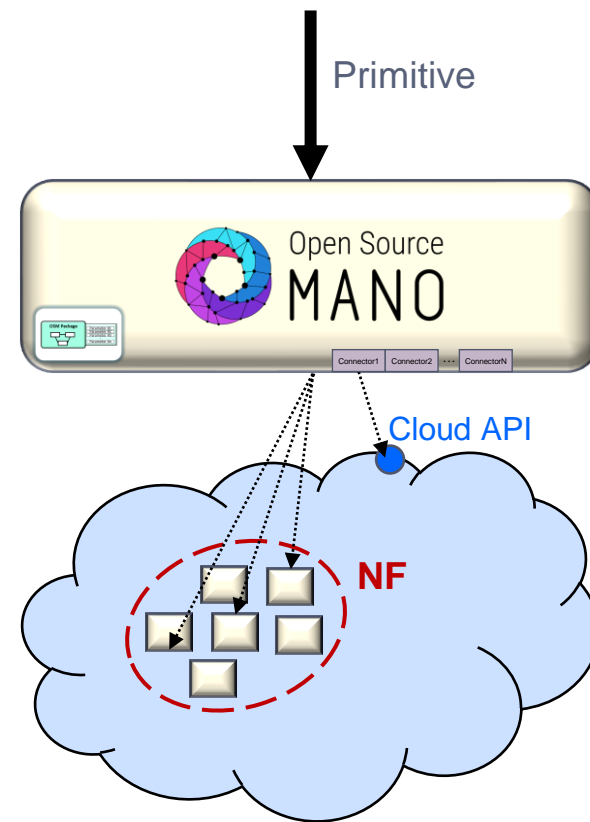
... while keeping flexibility

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



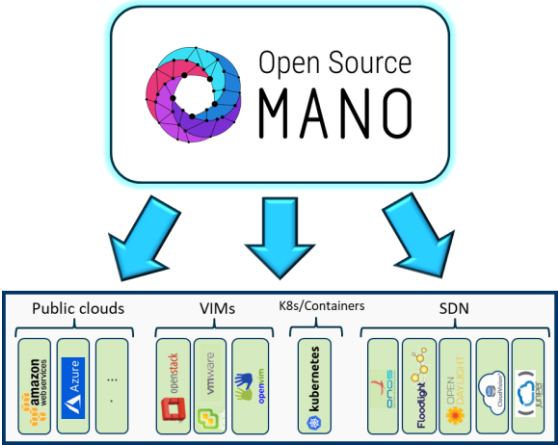
OSM manages the low-level setup for Network Functions, so that they are ready for use.

- It covers in 100% the role of a kind of **specialized PaaS for Network Functions**, with 2 key features:
 1. **Complex connectivity** setup, including EPA and underlay scenarios.
 2. Solve **inter-NF relations**.
- Returns: **NS/NF ready for its use and properly connected**:
 - Exposes the “**function**” and its lifecycle, not its components.
 - Presented as a whole (i.e., abstracts from low-level details of the NF).
 - Easy (standardized) access to NF's lifecycle operations, via **primitives**.
- This follows well-known paradigms in **IT** and **public clouds**.

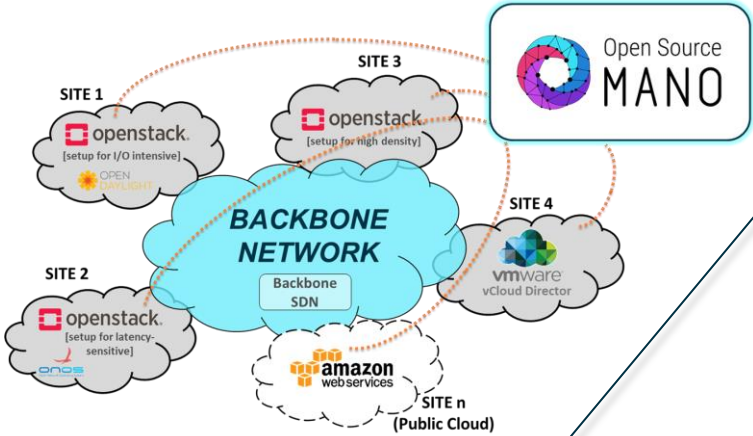


... on different types of infrastructure and across different locations...

MULTI-VIM & MULTI-SDN

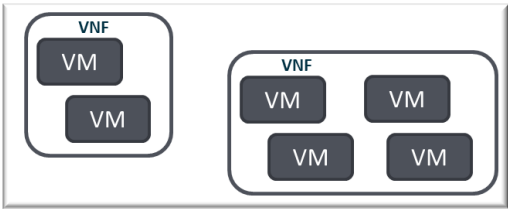


MULTI-SITE

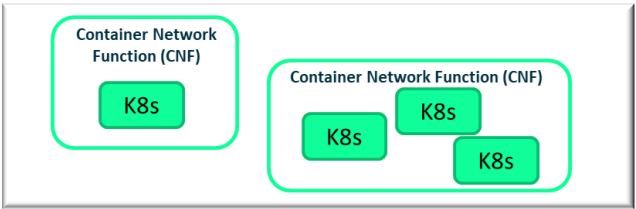


... with NFs composed of VMs, containers and/or physical elements...

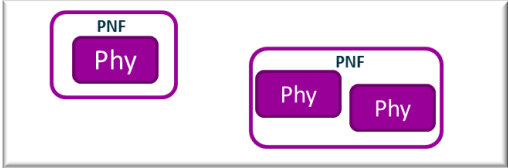
a) All VMs



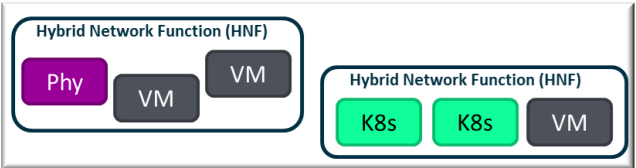
b) All Containers



c) All Physical

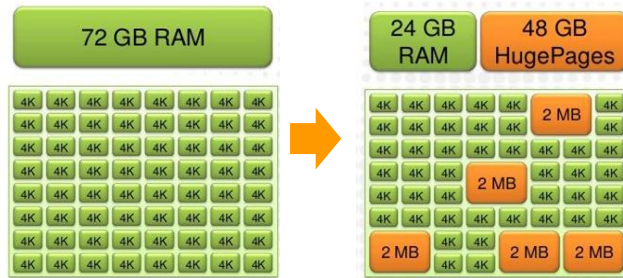


d) Hybrid cases

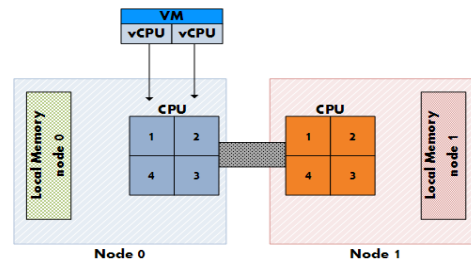


... and ready for network-specific workloads whenever needed

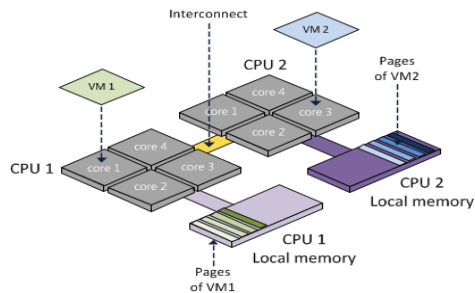
Huge Pages



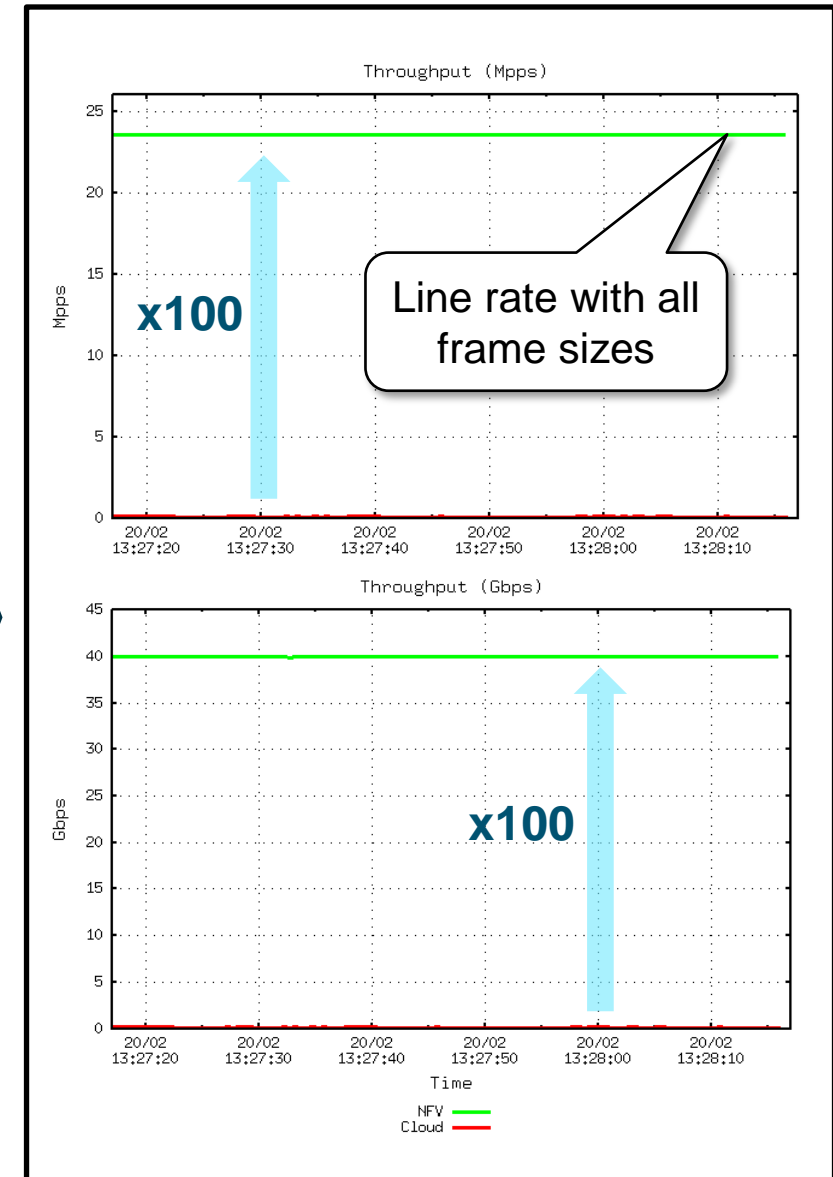
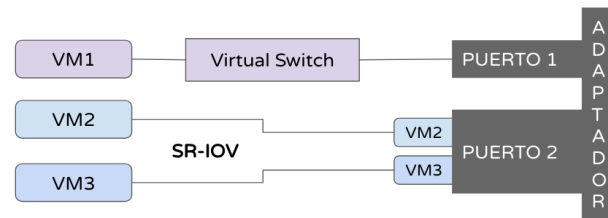
NUMA Topology Awareness



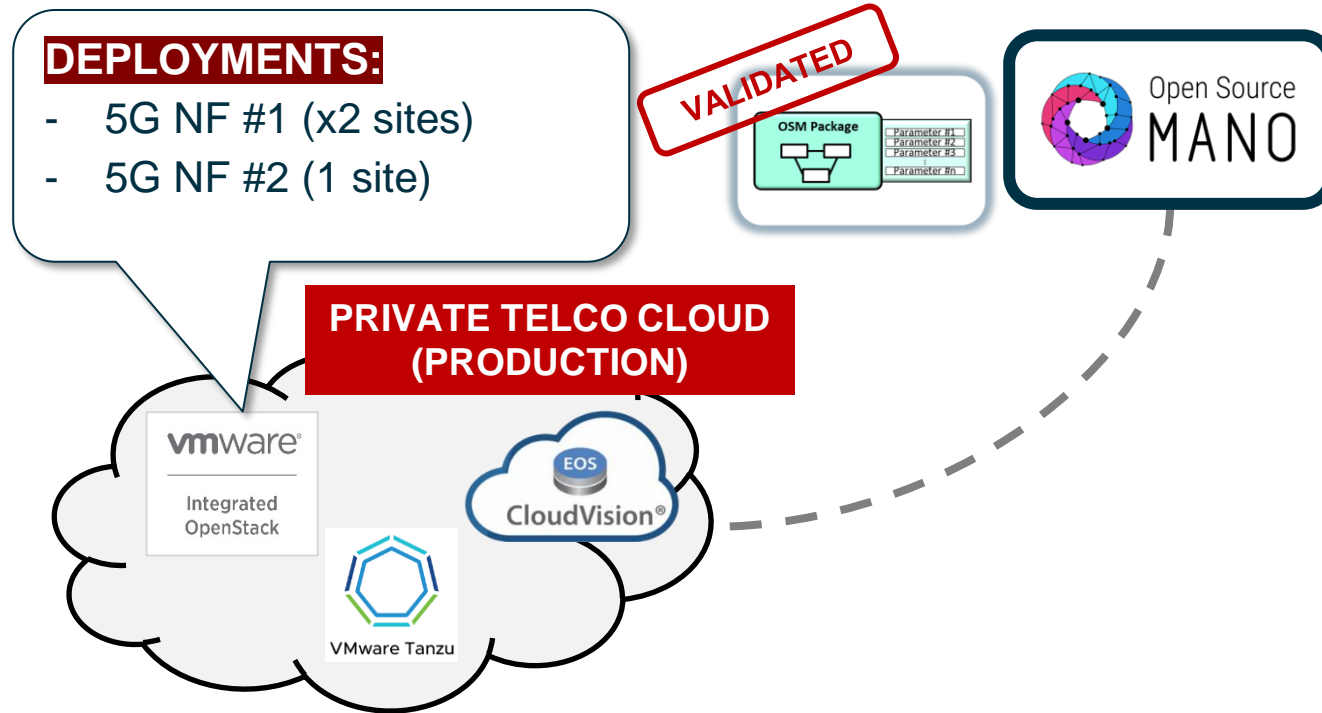
CPU Pinning



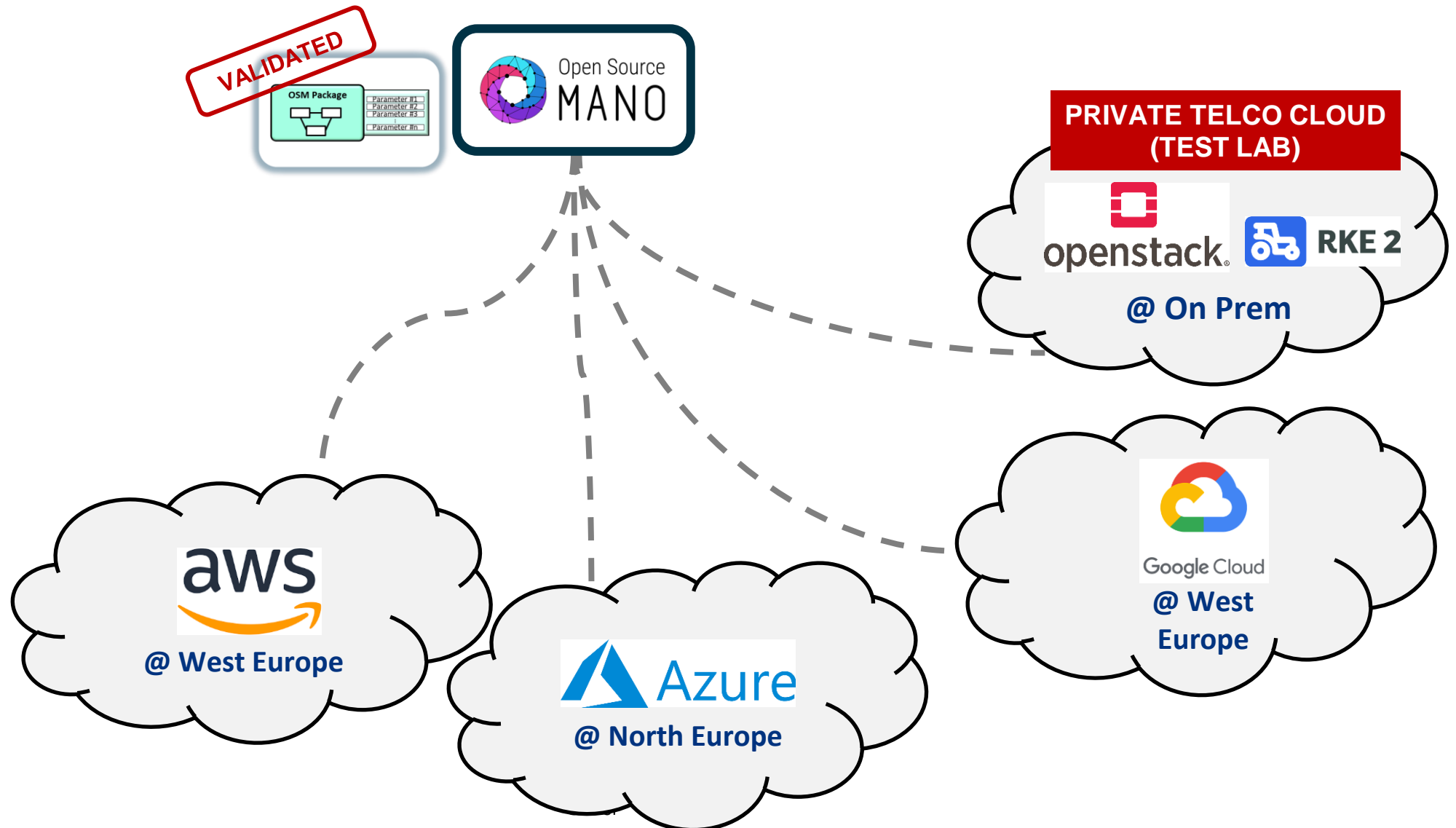
Data Plane assignment



Using the exact same packages, the same service can be deployed in multiple types of clouds and sites



Using the exact same packages, the same service can be deployed in multiple types of clouds and sites



As a result, OSM brings big operational benefits for the challenges of a modern Telco Cloud



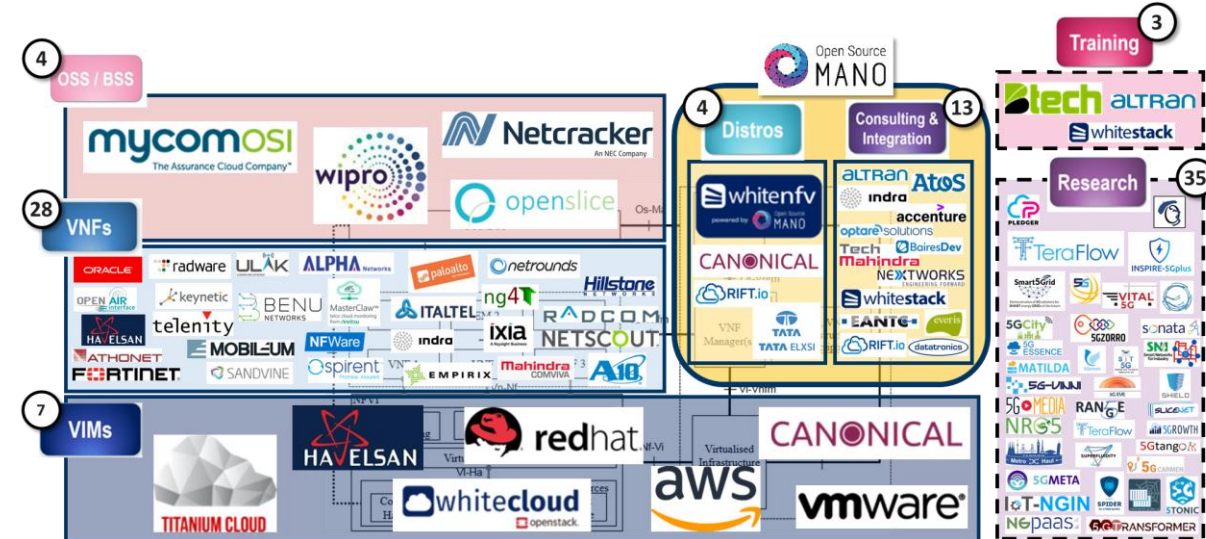


A Vibrant and Thriving Community

ETSI OSM community is really LARGE AND DIVERSE, with 153 members today



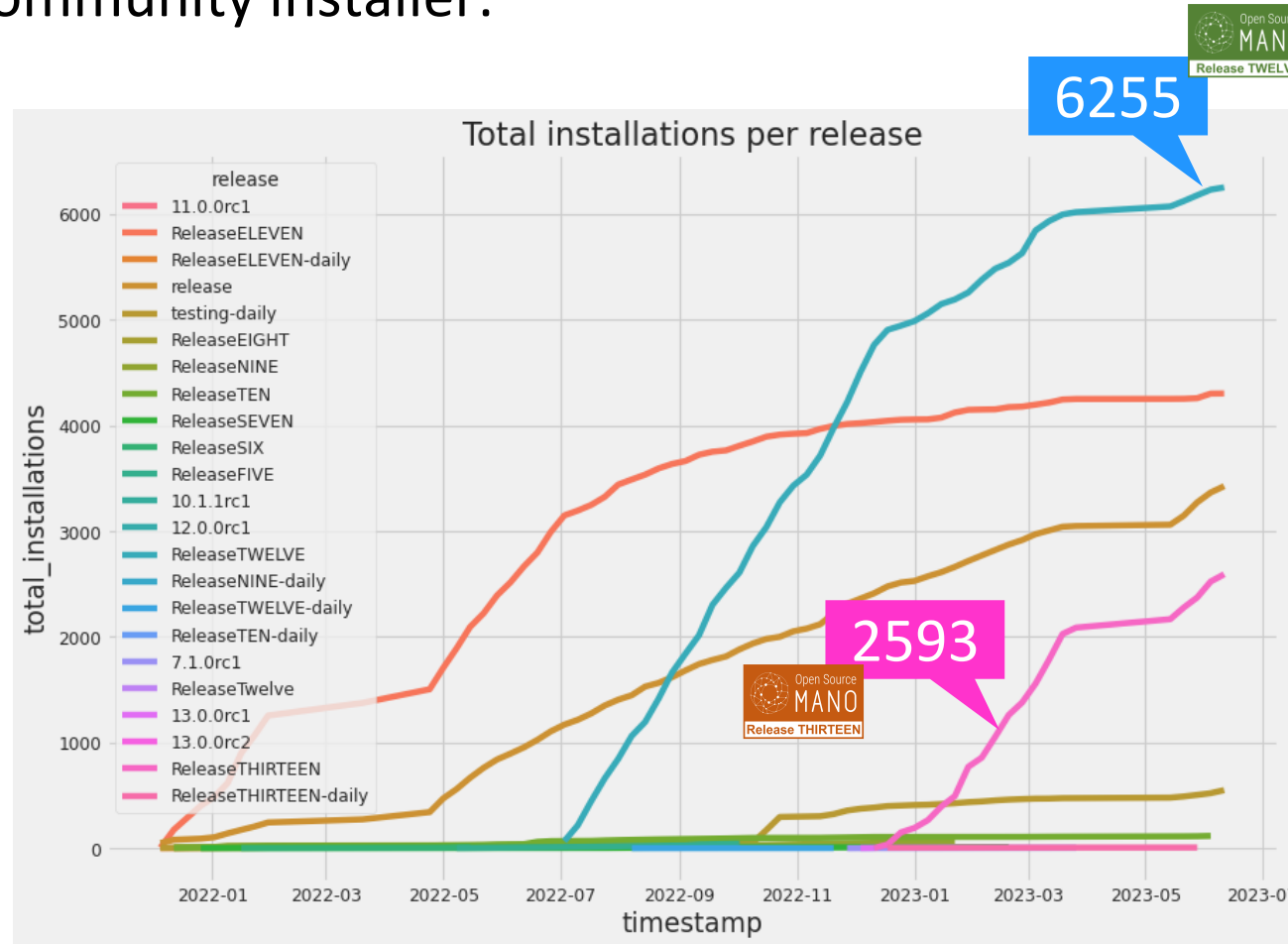
... with a significant number of commercial offers related to OSM (“OSM Ecosystem”)



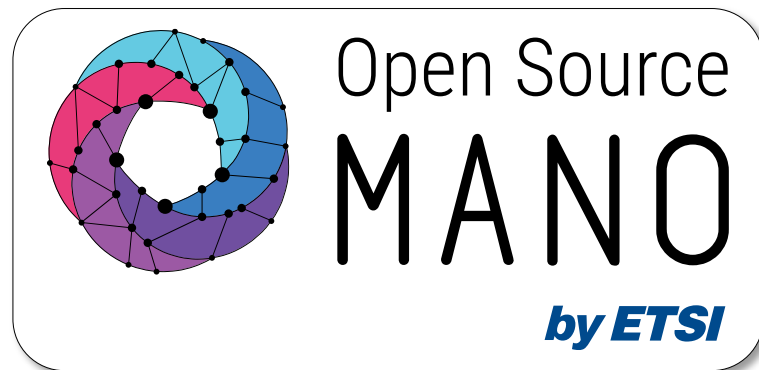
https://osm.etsi.org/wikipub/index.php/OSM_Ecosystem

... which benefit from the feedback of a strong user community, adding to existing commercial deployments...

Stats of OSM's community installer:



... and the large size of the research projects using OSM as their orchestrator of choice



<https://osm.etsi.org/wikipub/index.php/Research>



A new release
is coming!



Release FOURTEEN brings a whole set of new functionalities ...



Closed-loop life cycle architecture

- GA of new monitoring architecture for closed loops.
- Service KPI of VNF using exporter endpoint.
- Autoheal switch and autoscale switch.



Security enhancements

- Replacement Pycrypto with PycryptoDome.
- Pod Admission Policy for Helm-based EE.
- Authenticated gRPC for Helm-based EE.



Usability and platform management

- User management enhancements.
- Audit logs generation for OSM



Infra modelling and NF lifecycle

- RO performance optimization.
- IPv6 support.
- Transport API (TAPI) WIM connector
- Support of volume multi-attach.
- IP address and hostname for horizontally scaled VM.
- Use existing flavor-id as an instantiation parameter.
- Instantiation parameters for Juju bundles.



OSM installation

- Helm Charts for deploying OSM on K8s.
- Update/Upgrade of OSM services.



... which are added on top of an already long set of features...

Release ZERO

- Simplified on-boarding process
- Human-readable
- Multi-VIM support
- EPA Support, as
- Underlay config
- Web interface
- Comprehensive
 - Installation gu
 - How-to guide
 - Data Model co
 - Minimal infra
 - Videos
 - ...

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Release ONE

Multi-VIM

Multi-SDN

Network Service scaling

Monitoring
Plugin Model, N
App metrics, no

Full Day 0 & D operations

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Release ELEVEN brings new features to foster current and new deployments

SOL004 and SOL007 package formats



Better coordination across PNFs, VNFs, and CNFs

- Enhanced data exchange between



Available at:
osm.etsi.org

Brand-new support for Google Cloud

- Completing the infrastructure support for 3 largest public clouds

Fine-grained operations in CN

- Start and stop services
- Run one-shot commands
- Files API

... and other improvements in usability

- On-demand conf
- Push notification
- Policy support

IMPROVED MOD

- Full support of li
- Consistency che
- MAC address se
- Support of alter

NETWORK SLIC

- Integrated S
- IM extendec

MULTI-SITE EX

- Dynamic int
- WIM plugin
- Multi-VIM E

MONITORING IMPROVEMENTS

- Extended interop capabilities
- Policy support
- VNF + VIM Metrics Collection



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Release SIX

NBI and operation

- RBAC improvem
- Re-enable NS pr

Monitoring



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source



Monitoring

Open Source

• Docker, Vagrant and VM image install

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Release TWELVE adds features well connected with key use cases and field demands

NF Healing

- VDU Healing
- Auto-healing

SOL003 support

- SOL003 support as G-VNFM
- SOL003 subscription to VNF-

NS Lifecycle

- Upgrade of VNF instances (upgrade of charms and primiti
- Removal of VNF instance from running NS.

... and other improvements in usability



Additional support

Release THIRTEEN adds features well connected with key use cases and field demands

New closed-loop life cycle arch.

- VM status, NS topology and VIM status acquired via Airflow.
- Prometheus Rec. Rules to derive VNF and NS status.
- Configurable Prometheus scrape targets.

Internal LCM evolution

- Saga-based LCM Milestone 1
 - Configuration via configman library.
 - LCM-RO communication via Kafka.

Execution Environments (day-2)

- Server-side authenticated gRPC channel in Helm-based Execution Environments.
- Upgrade of helm-based EE in VNF instances.
- New convention for charms naming in OSM.



NS deployment

- Keeping persistent volumes of VNF.
- VIM CA certificates registered at VIM creation/update.
- Automatic WIM selection for inter-DC networks.

OSM installation experience

- Air-gapped installation.
- Optional installation of the new monitoring architecture.
- Automatic publication of charms in OSM CI/CD for charm-based installation.

OSM client

- Refactor of osmclient commands.
- VIM configuration for Prometheus-based telemetry.



Access to subscription API client



Monitoring of availability



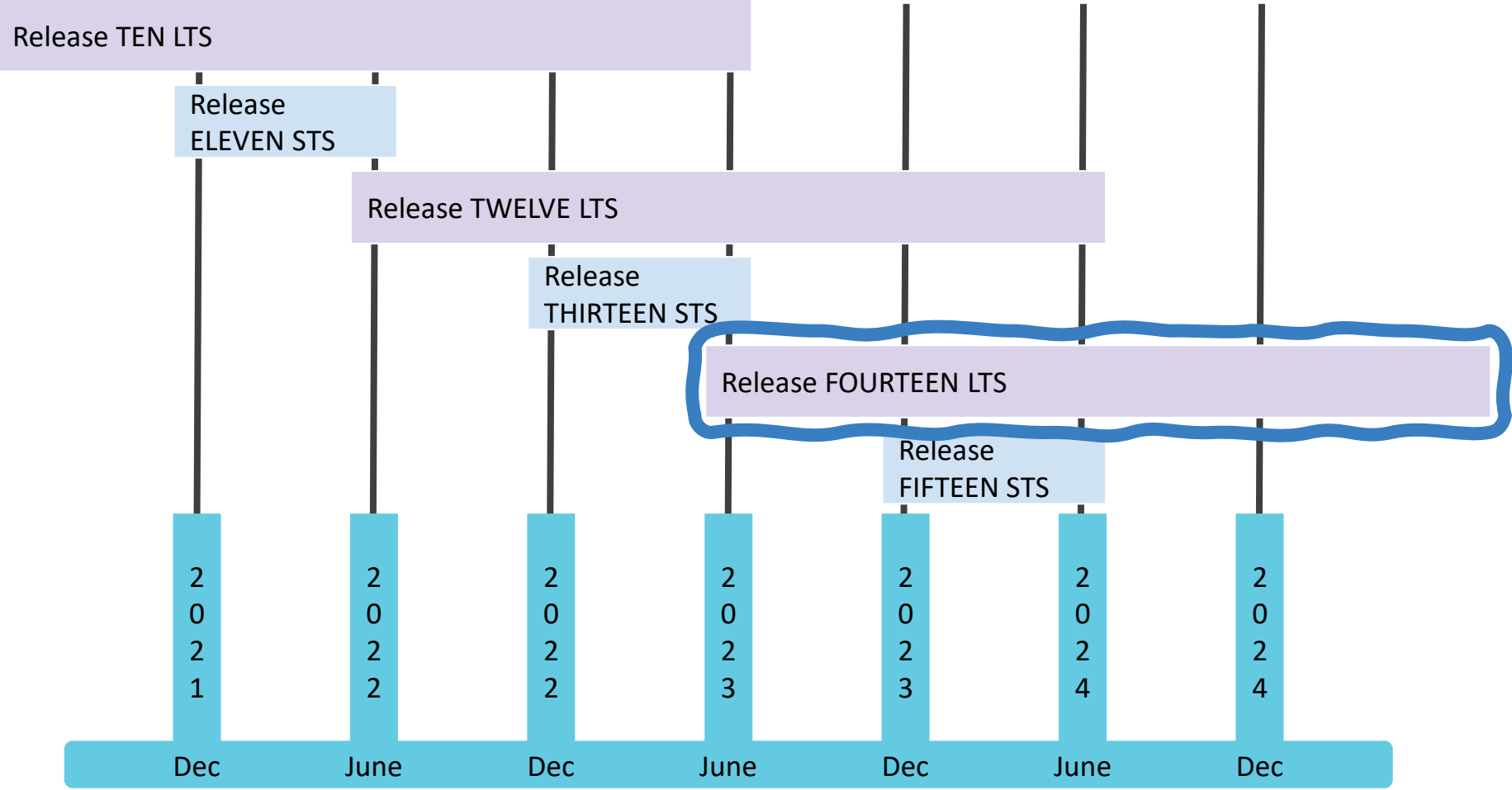
Warnings of latest OSM production deployments



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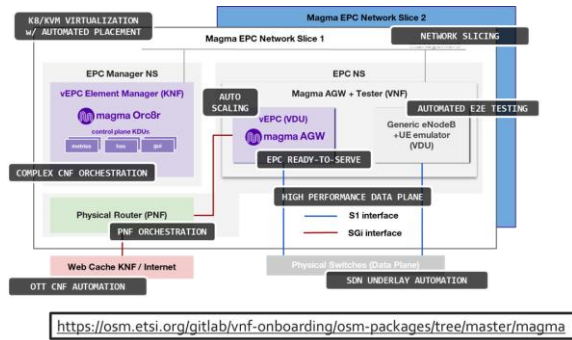
Release FOURTEEN is our 3rd LTS release



LTS Releases (Long Term Support)	STS Releases (Short Term Support)
24 months community support	6 months community support
Oriented to production	Oriented to innovation & development
Focus on stability	Focus on innovation & agility
Community grants upgrade between LTS's	Upgrade on a best effort basis

At this point, it is becoming easier explaining OSM features in practice

MAGMA EPC DEMO (2020)

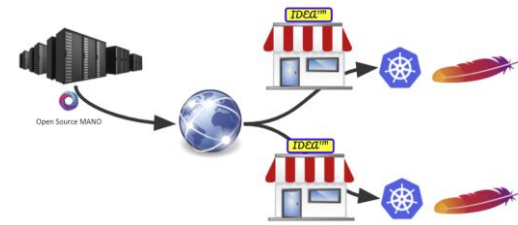


OSM#11 Hackfest

11 teams onboarding 8 NFs in just one week!



Release TEN Webinar Edge orchestration with OSM

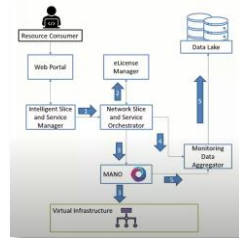


OSM-MR#11 Hackfest



OSM Ecosystem Day 2022

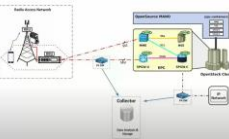
Marketplace-driven 5G network slices



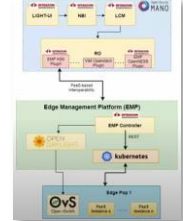
Deployment of MEC Applications



P4-based in-band telemetry



PaaS-driven interop

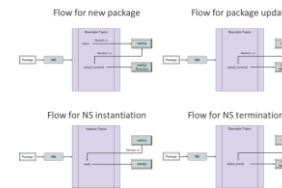


Release TWELVE Webinar

Healing & scaling in massive sports events

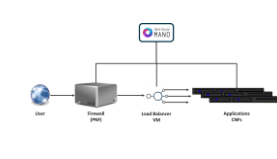


Live upgrade of a NF

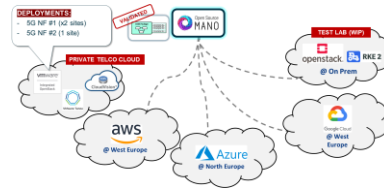


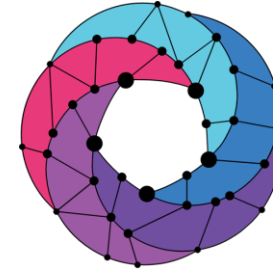
Release ELEVEN Webinar

Resolution of inter-NF relations



Multi-Cloud Deployments





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Thank You!

osm.etsi.org

osm.etsi.org/docs/user-guide

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