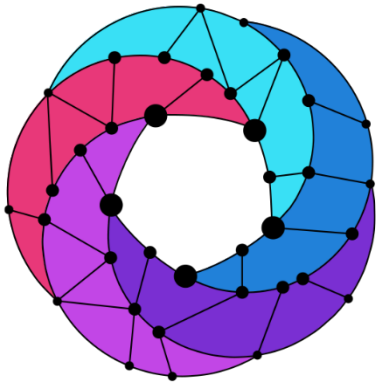


Open Source
MANO

ON OSM

Diego R. Lopez – Telefónica I+D

ETSI

THE GOALS

- Delivering an open source MANO stack aligned to ETSI NFV (information and data) models
  - Capable of consuming published models for NFV service and deployment (VNFD, NSD, etc.)
  - Extending these models, and recommending back to ETSI NFV
- Assuring predictable behavior of VNF and NS
  - Under these models
- Enabling an eco-system of model-based VNF solutions
  - Ready to be offered to cloud and service providers
  - No need of integration on a per- customer and/or MANO vendor basis

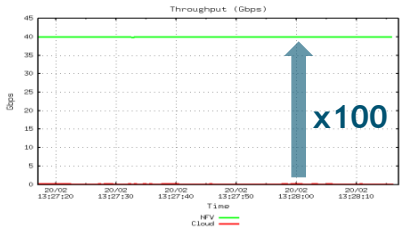
THE NATURE

- And Open Source Community hosted by ETSI
  - Easing alignment with NFV ISG
  - Driven by service provider requirements
  - Supported by key players in the virtualization space
  - And open to new fellow travellers

THE REQUIREMENTS

Open Source MANO

1. EPA support



2. Multi-VIM

openstack CLOUD SOFTWARE

vmware

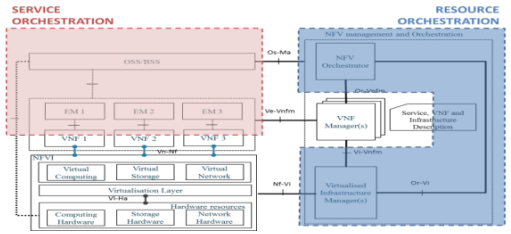
onos Open Network Operating System

OPEN DAYLIGHT

OPNFV

3. Multi-site

4. SO and RO can be detached



Addressing the aspects required by deployments in the field

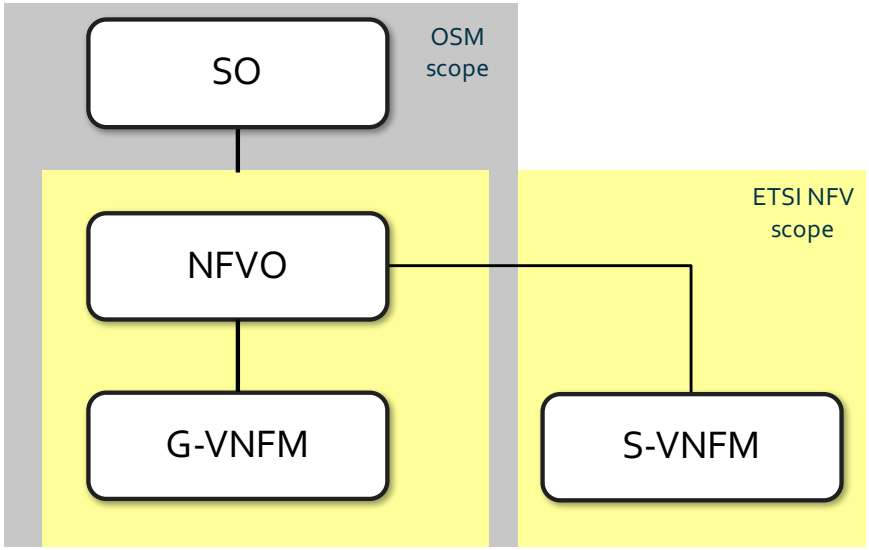
THE SEEDS

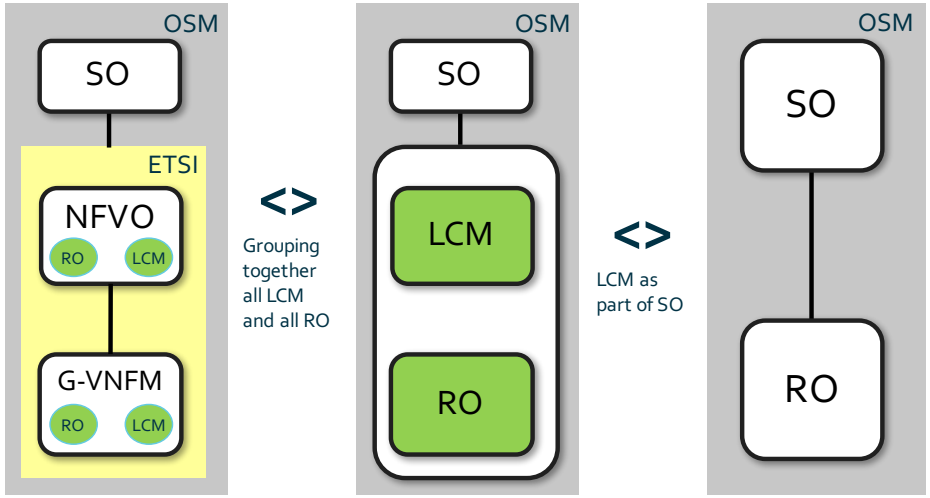
- OSM does not start from scratch
- The project starts with running code from the beginning
  - OpenMANO (RO)
    - https://github.com/nfvlabs/openmano
  - Juju charms (VNF models & configuration)
    - https://jujucharms.com
  - RIFTware Launchpad (SO/NS management)
    - https://github.com/RIFTIO/RIFT.ware
- What helps to
  - Avoid over-engineering due to excess of abstraction
  - Start getting traction at SP level
  - Ecosystem steering
- Seed code represents an initial starting point
  - All components pluggable/replaceable for OSM

THE BASIC CONCEPTS

- Resource Orchestration (RO)
  - Set of operations for the allocation of compute, network and storage resources for the deployment of VNFs and their interconnection
- Service Orchestration (SO)
  - Set of operations for the automatic configuration of P/VNFs, networks and traffic forwarding between P/VNFs in a coordinated way
  - Configuration is driven by stimulus coming from
    - Operator / OSS (high level service primitives)
    - VNF / EM
    - Infrastructure / VIM
  - Nothing prevents service orchestration from requesting changes in resources
- Life Cycle Management (LCM)
  - Set of operations related to the life cycle of a VNF or NS, involving changes in resources and changes in P/VNF and network configuration in a coordinated fashion
  - It can be considered a limited subset of SO operations

THE MAPPING(S)





- Map NFVO and VNFM features in a way that avoids functional fragmentation
- And make them pluggable

- Automated deployment & interconnection of all components from an NFV Network Scenario
- Management of lifecycle at Network Service level

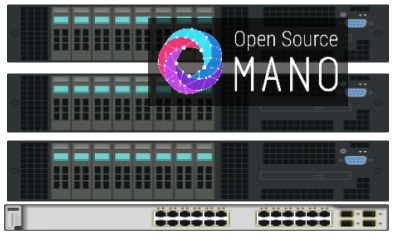
THE MODEL-DRIVEN APPROACH

Open Source MANO

LOCAL DEVELOPMENT &TESTING

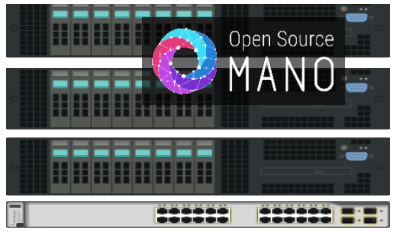
- Open development environment
- Functional tests
- Low cost
- Integration from the beginning

TEST POOL FOR DEVELOPERS



- Real servers and switches
- Performance tests (EPA can be enforced)
- Cost-effective shared infrastructure
- Move the value to VNF services

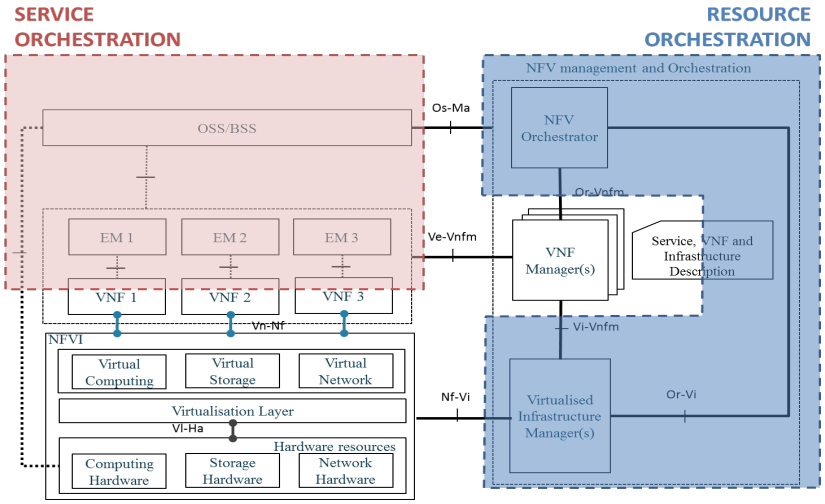
SERVICE PROVIDER



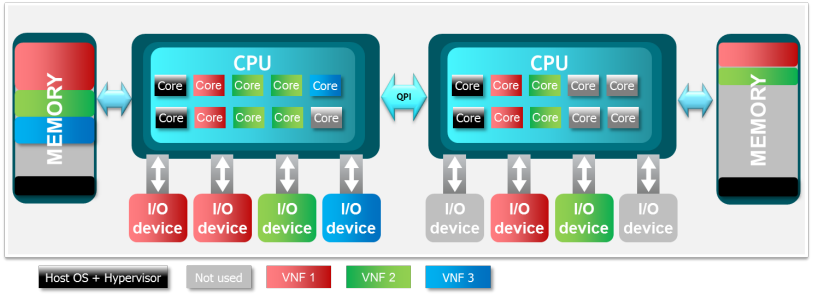
- Production/pre-production environment
- Real network scenarios
- Final service configuration
- Fast deployment
- Low final integration cost

- OSM is committed to apply the models defined by ETSI NFV
- And contribute back according to development and experimentation results

THE CHALLENGES FOR THE RO

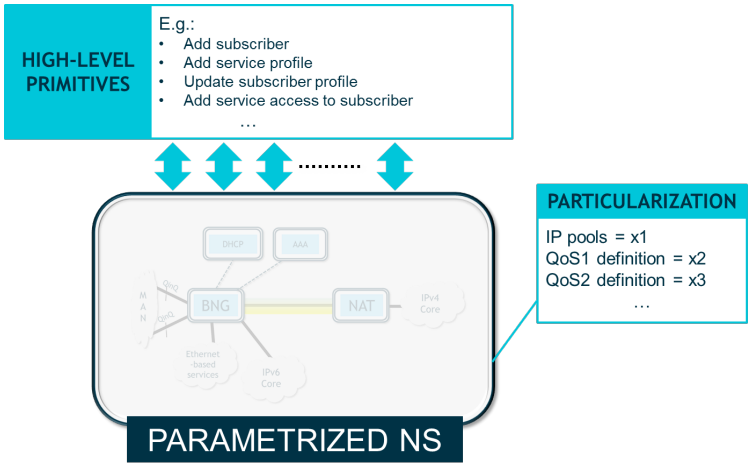


- Smooth integration with legacy OSS whenever needed
  - Fully decoupled
  - Relaying on the model-driven approach
- Facilitate horizontal virtualization
  - Escape from *virtualized boxes*
  - Enable going beyond fixed (ossified?) architectures



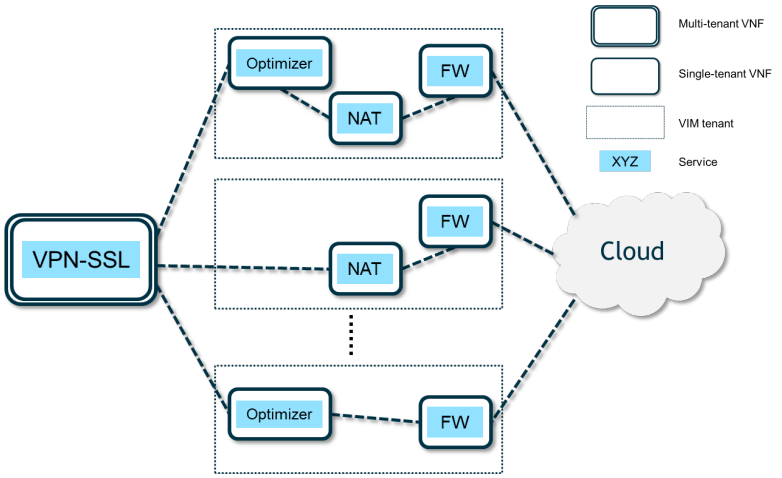
- Assure proper resource allocation and interconnection for each component
  - Based on EPA-enabled descriptors
- Further automation at SO level
  - Assuring predictable behaviour

THE CHALLENGES FOR THE SO



- A coherent E2E view at the NS level
- Automated configuration of VNFs
  - Agnostic to configuration method
- Smooth integration of automation-capable PNFs

- Seamless management of multi-tenancy
  - Multi-tenant infrastructure vs multi-tenant VNF in same service



THE CHALLENGES FOR THE MODELS

- Ready for automating realistic NFV environments
  - VNFDs
    - Self-contained
    - Capacity: VDUs, VLs,..
    - Configuration and lifecycle
    - Monitoring (and what to do with it)
  - Network scenario descriptors
    - Actions and parameters at scenario level
    - Replicable template, with personalization
    - Composition of scenarios
- Practical considerations (experimental evidence)
  - L2 topology is relevant
    - EPA + Connectivity
    - VNF placement is relevant for configuration
  - Single vs multi-tenant VNFs
    - Container types
    - Lifecycle considerations
- Image pre-configuration
- PNFs and integration with legacy OSS

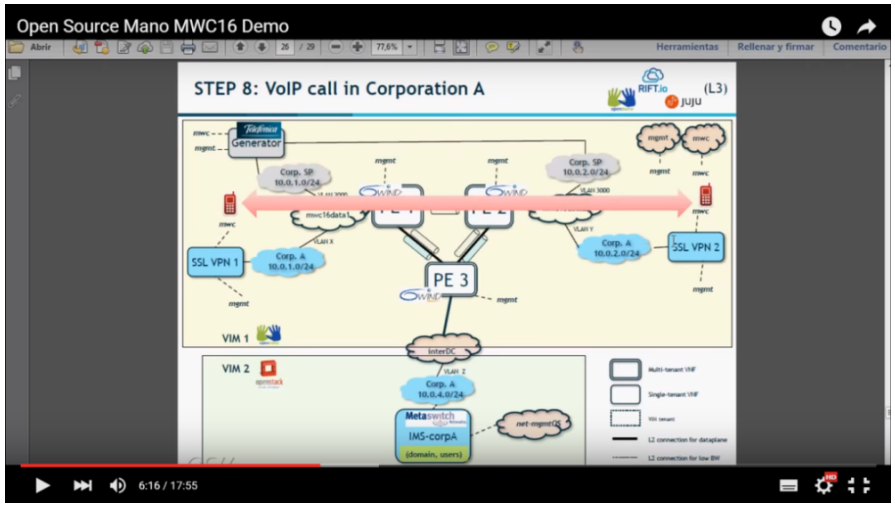
THE CHALLENGES FOR THE VIM

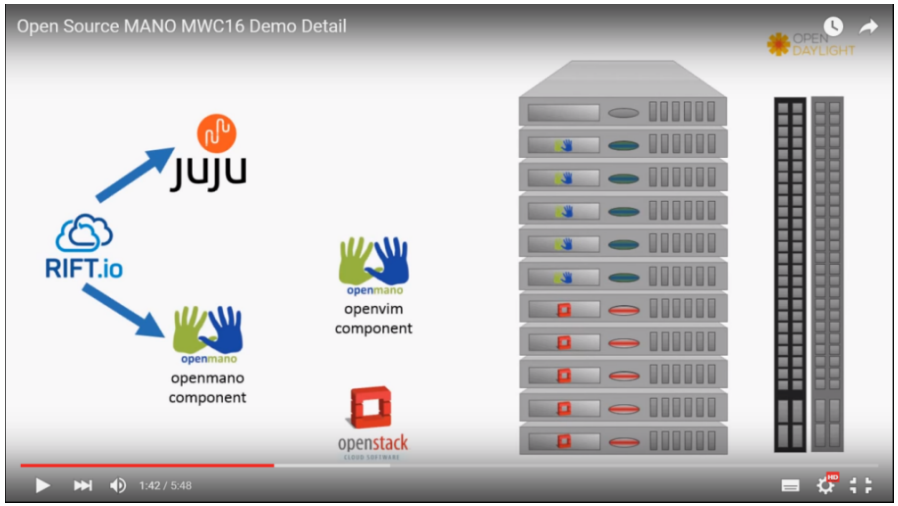
- EPA support in reference VIMs
  - Assuring interoperability with reference VIM layers capable for predictable performance
  - A VIM layer capable of supporting EPA natively will be assumed
  - The project will provide an EPA-ready VIM module to start
- Close interaction with key open-source projects for VIM
  - Assuring a proper EPA support as soon as available
  - OpenStack, as industry reference VIM
  - OpenDaylight, supporting the creation of native E-LAN and E-Line L2 services in OpenStack and elsewhere
  - Facilitating OPNFV integration
  - Continue the evolution of the OpenVIM component in OpenMANO

THE DEMO AT MWC

- Demonstrate the feasibility of the concepts, starting with the existing code seeds
- As realistic as possible, with commercial VNFs
- Proof of main concepts in OSM
  - E2E automation
  - EPA and infrastructure network control – SLA can be guaranteed
  - Multi-Site
  - Multi-VIM
  - Combination of multi-tenant and single-tenant VNFs
  - Connection to external physical lines
- Useful for next stages of the project
  - Identification of required enhancements
  - Further code development

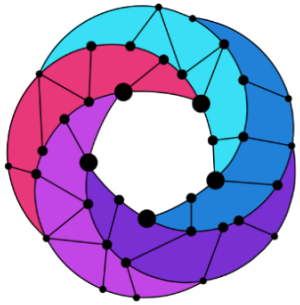
THE MWC DEMO VIDEOS





https://www.youtube.com/watch?v=JJlxwJStkTk

https://www.youtube.com/watch?v=yyo26w8HSn8



Open Source
MANO

Find out more and come join the party at

osm.etsi.org