ODL and NFV orchestration
The OSM case

GCTO Unit / Telefónica I+D
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OSM is a **large community**, with nearly 50 companies on board

- **7 Global Service Providers**
- **Leading IT/Cloud players**

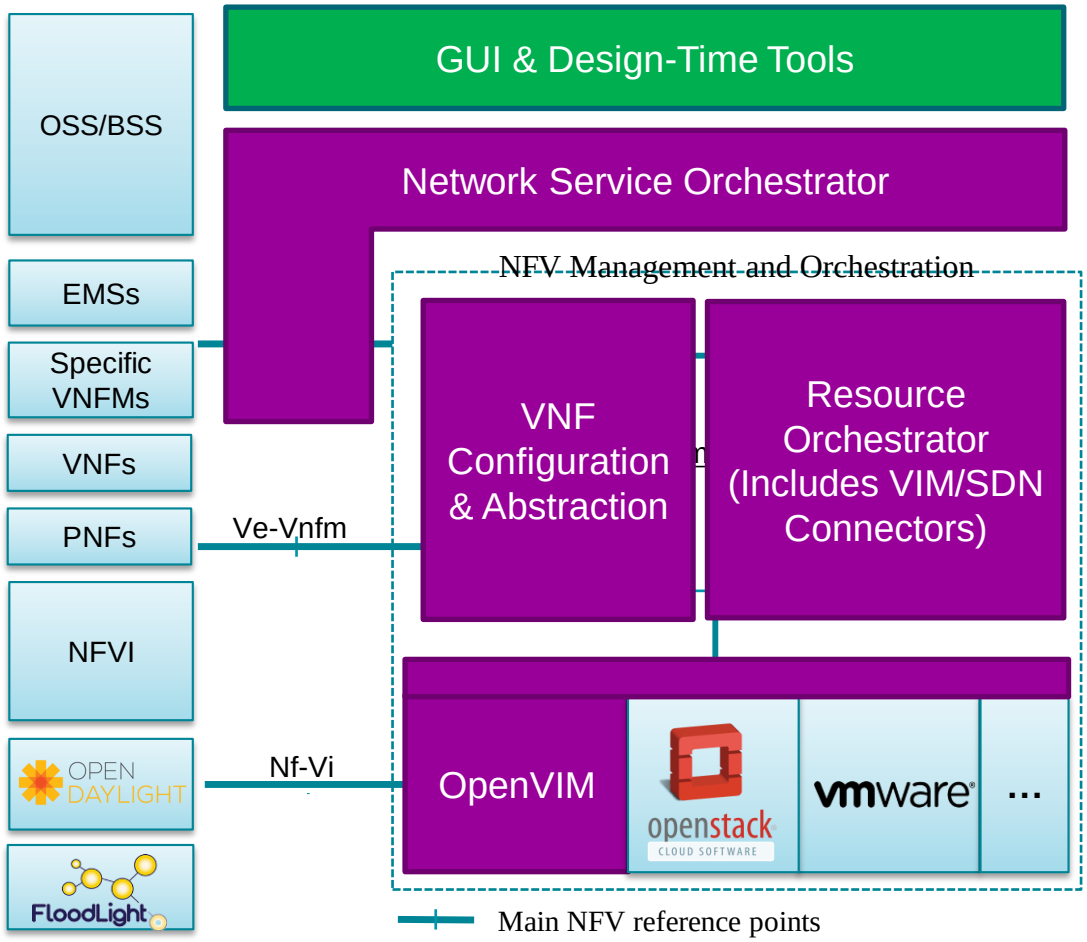
OSM scope covers anything needed to deliver a **production-quality MANO stack**

RUN-TIME SCOPE

- Automated E2E Service Orchestration
- Superset of ETSI NFV MANO
- Plugin model for integrating multiple VIMs
- Plugin model for integrating multiple SDN controllers
- Integrated Generic VNFM with support for integrating Specific VNFMs
- Support for Physical Network Function integration
- Greenfield and brownfield deployments

DESIGN-TIME SCOPE

- Network Service Definition
- Model-Driven Environment with Data Models aligned with ETSI NFV
- VNF Package Generation
- GUI



OSM Release ZERO is available since May'16

- Simplified on-boarding process
- Human-readable VNF and NS descriptors
- Multi-VIM support: OpenStack, OpenVIM
- EPA Support, assuring predictable performance
- Web interface
- Comprehensive documentation
  - Installation guides
  - How-to guides for users and developers
  - Data Model covered in detail
  - Minimal infrastructure requirements
  - Videos
  - …

… and we have just launched our **Release ONE**

Multi-VIM

openstack CLOUD SOFTWARE

openvim

vmware

Multi-SDN

OPEN DAYLIGHT

FloodLight

Open Source MANO

Release ONE

Available at:
osm.etsi.org

Plugin model

Easy addition of new VIMs and SDN types

Multi-site Network Services

Simplified installer
(one-click installation)

OpenVIM now shipped as part of the OSM install

VIM for Enhanced Platform Awareness & Local Testing

openvim

… and a large number of **enhancements in VNF/NS models**

If you want to learn more…

- OSM Release ONE – GIVE IT A TRY!
  - All-in-one installer: https://osm-download.etsi.org/ftp/osm-1.0-one/install_from_source.sh
  - Documentation: http://osm.etsi.org/wikipub/index.php/OSM_Release_1

Open Source MANO
Release ONE

Available at:
osm.etsi.org

- OSM Release ONE White Paper
  - https://osm.etsi.org/images/OSM-Whitepaper-TechContent-ReleaseONE-FINAL.pdf


Open Source MANO

An ETSI OSM Community White Paper

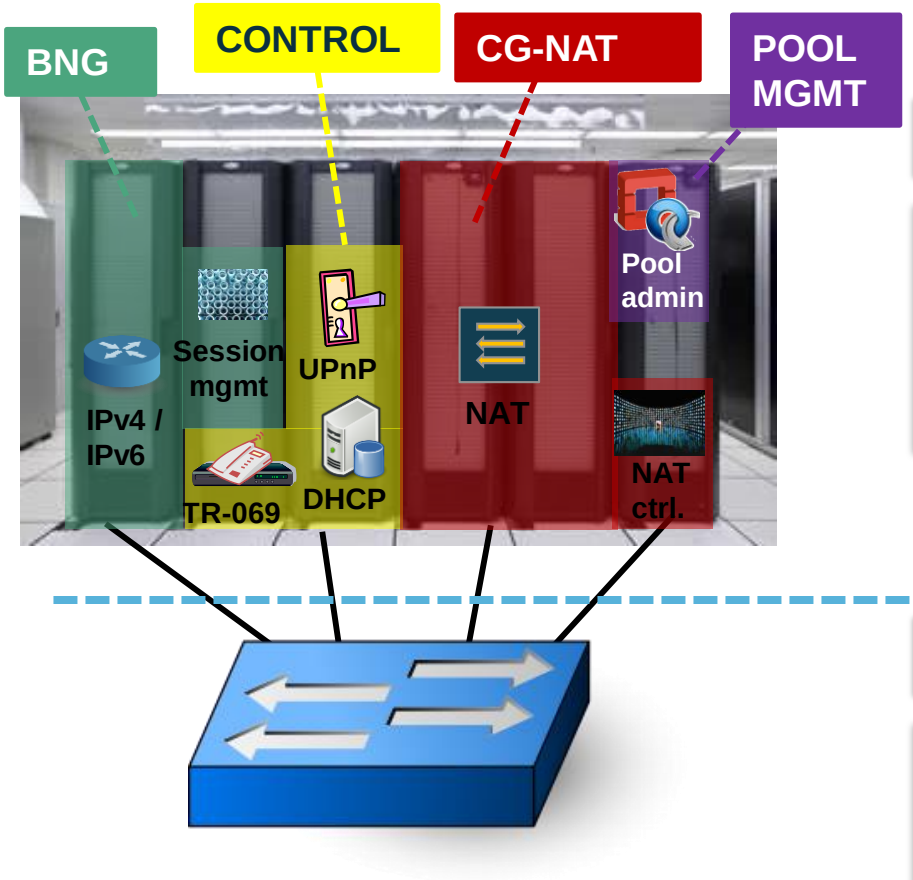
OSM RELEASE ONE

A TECHNICAL OVERVIEW

October 2016

The role of SDN in OSM

SDN as open technology for interconnecting VNFs



NFV

SW-defined Network Functions

- Running in slices of the infrastructure
- Unaware of the particular server where the slice was taken from

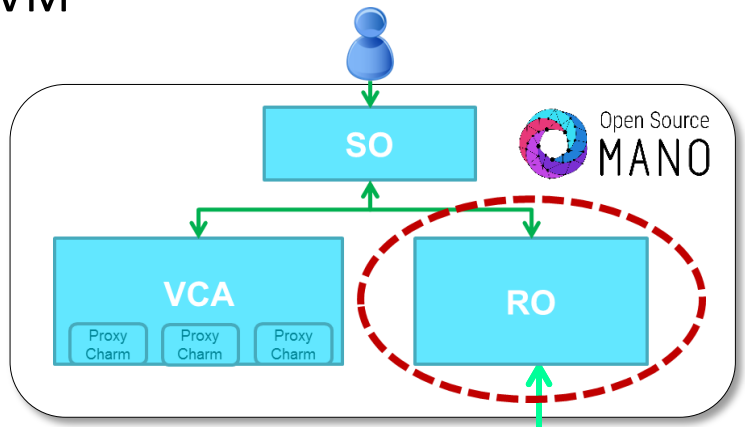
SDN

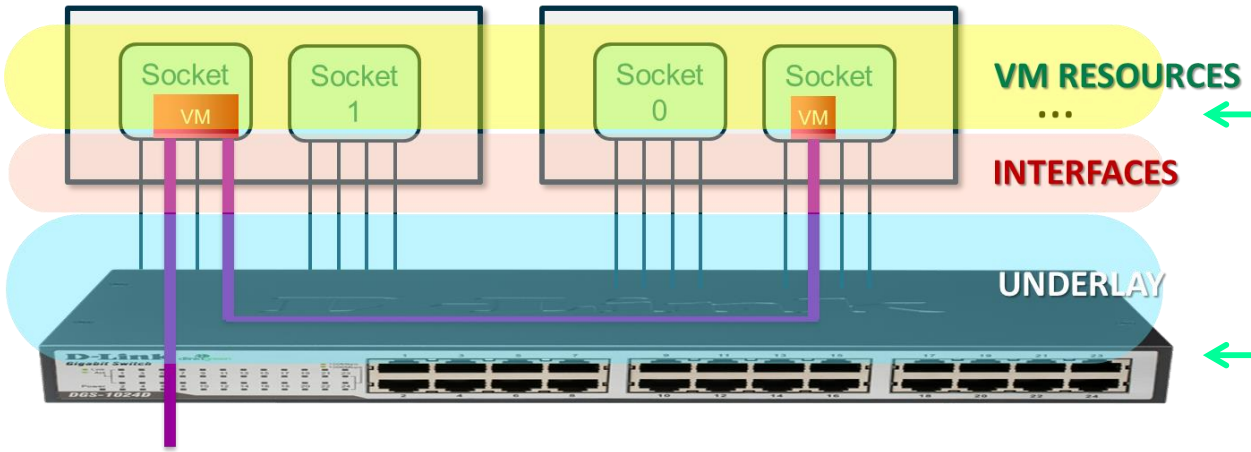
Interconnects the Virtual Network Functions

- Behaves as backplane
- Also provides connectivity to external physical nodes/networks

SDN is key for EPA support in order to deploy high performance VNFs

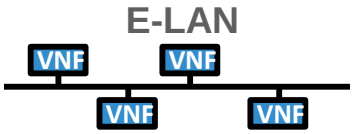
1. Accurate assignment of resources at VM level
2. Proper assignment of I/O interfaces to the VM
3. **SDN gives the ability to create underlay L2 connections**
   - Interconnecting VMs
   - Attaching external traffic sources





Support of all kind of L2 connectivity types with underlay switching

2 kinds of networks are required: E-Line and E-LAN



- Only 2 elements are connected
- Low impact in underlay switching tables: IN PortA -> OUT Port B

- ≥2 elements are connected
- Higher impact in the underlay switching tables: forwarding based on MACs

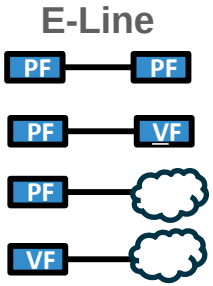
3 kinds of elements to be connected:

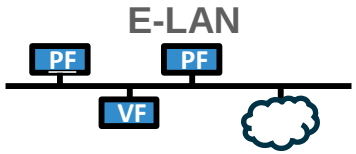
- PF pass-through interfaces
- SR-IOV interfaces (VF)

- Any other external element (PNF, physical external network)

VLANs to be added/removed depending on the element facing that port

ALL OPTIONS REQUIRED

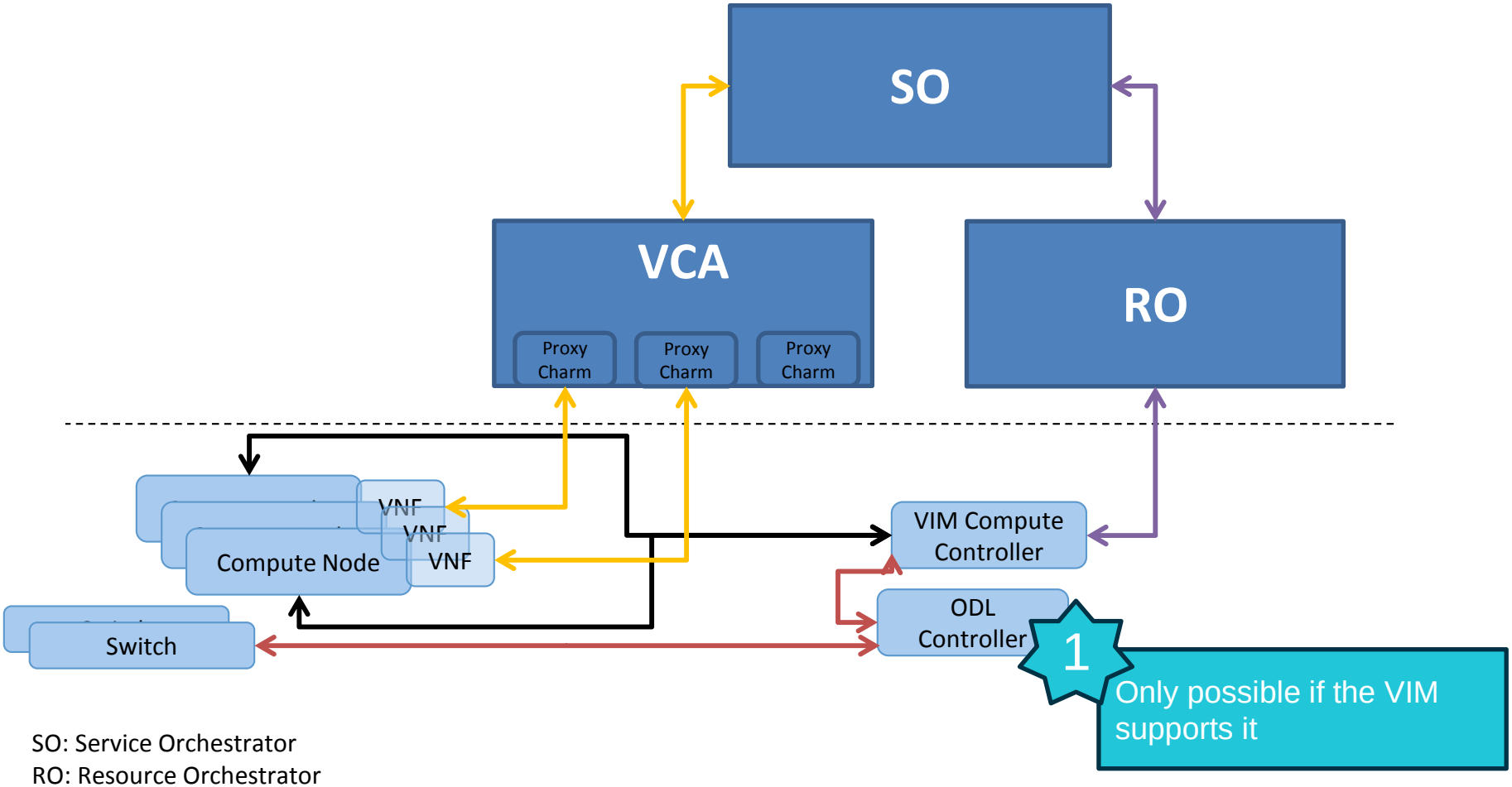




Proactive rules make the work

RULE	MATCH	ACTION
Rule1-1	IN_PORT	OUT_PORT
Rule1-2	IN_PORT, VLAN	OUT_PORT
Rule1-3	IN_PORT, DEST_MAC	OUT_PORT
Rule1-4	IN_PORT, VLAN, DEST_MAC	OUT_PORT
Rule2-1	IN_PORT	STRIP_VLAN, OUT_PORT
Rule2-2	IN_PORT, VLAN	CHANGE_VLAN, OUT_PORT
Rule2-3	IN_PORT, DEST_MAC	OUT_PORT1 + OUT_PORT2
Rule2-4	IN_PORT, VLAN, DEST_MAC	OUT_PORT1 + STRIP_VLAN, OUT_PORT2

VNF interconnection in an underlay can be done at VIM level



SO: Service Orchestrator
RO: Resource Orchestrator
VCA: VNF Configuration and Abstraction

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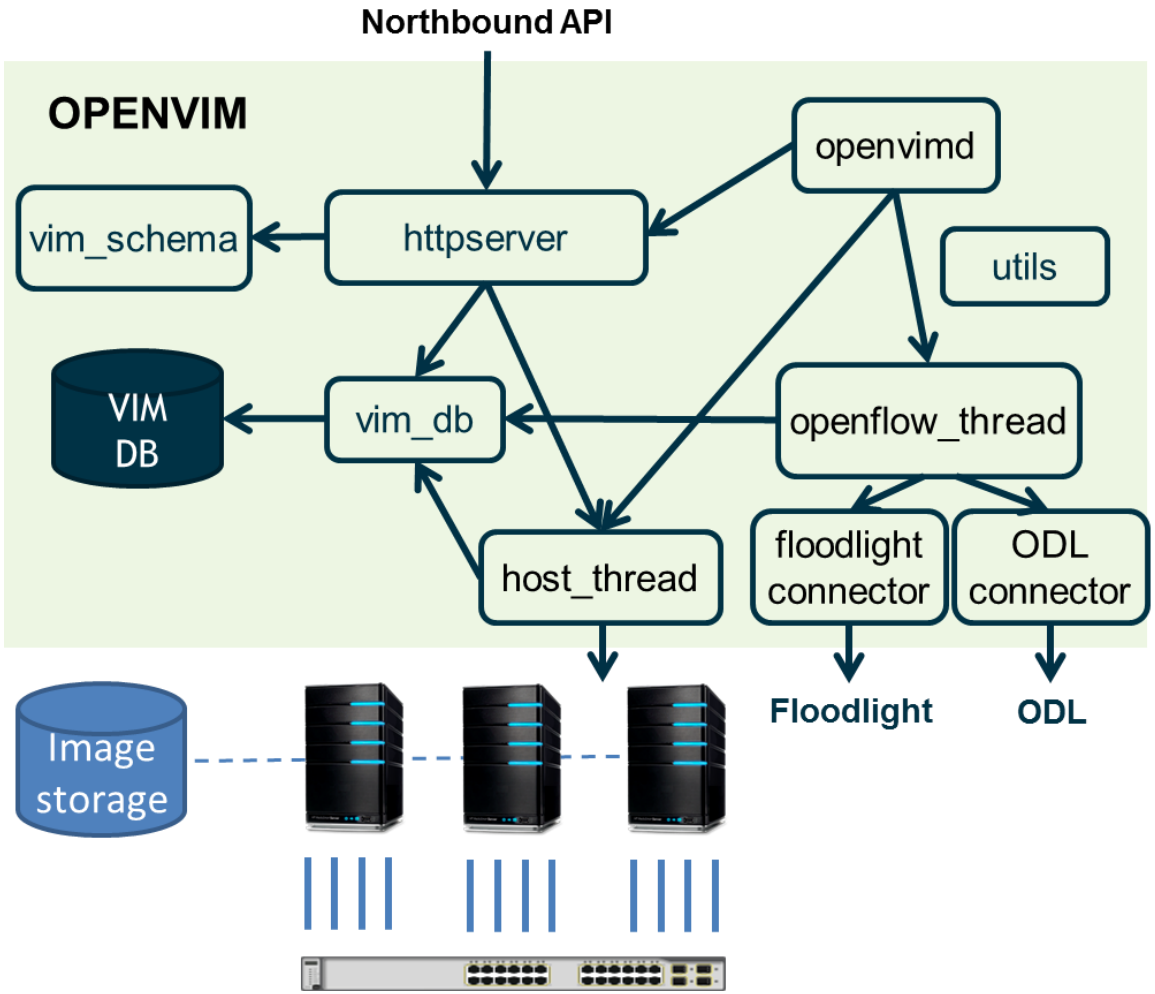
Plugin model in openvim facilitates interop with different controllers



SDN PLUGINS
• ODL • FloodLight

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VNF interconnection can also be done at RO level

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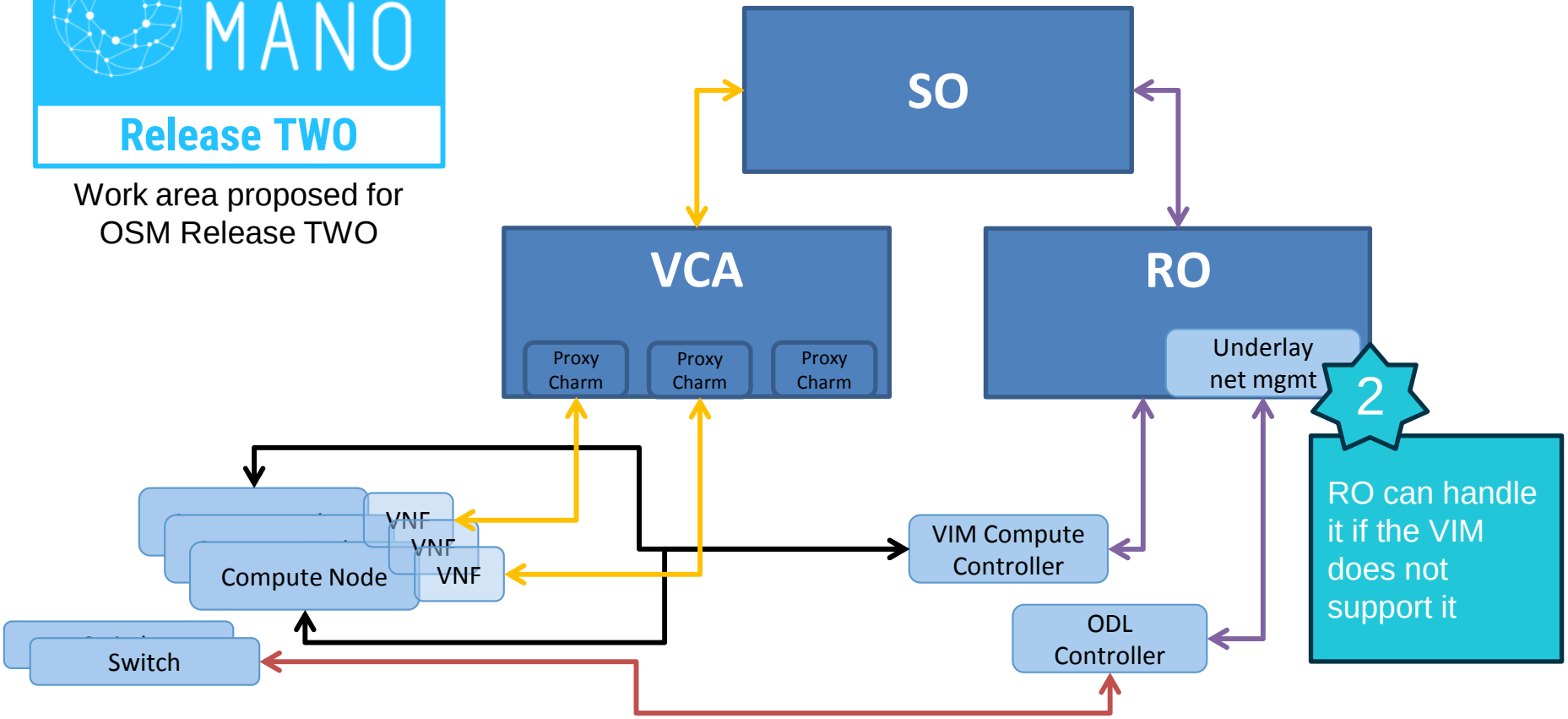
Release TWO

Work area proposed for OSM Release TWO



SO: Service Orchestrator
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VCA: VNF Configuration and Abstraction

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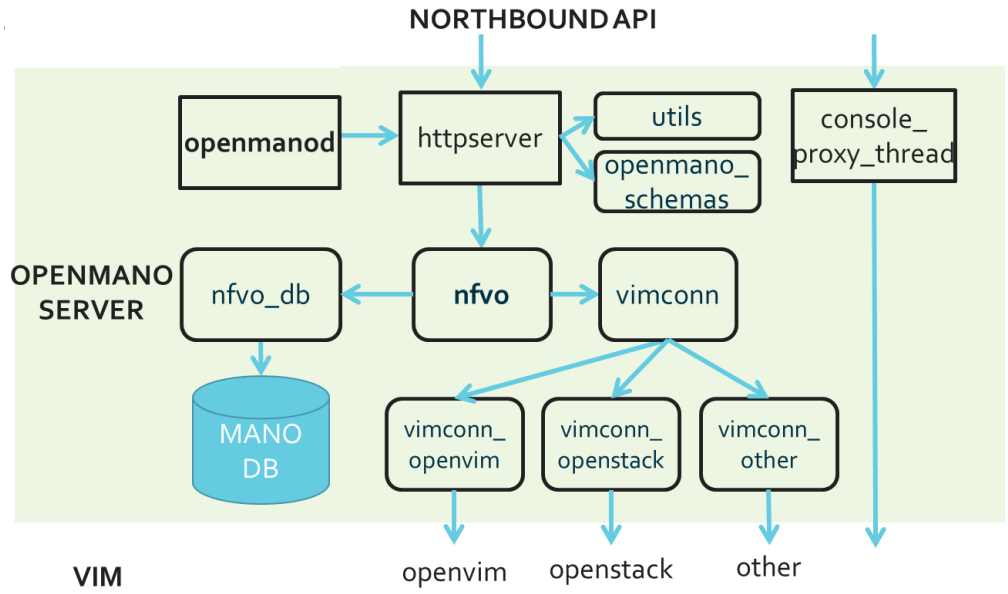
Plugin model in RO facilitates interop with different clouds and controllers



CMS PLUGINS	SDN PLUGINS
• OpenStack (several flavours) • OpenVIM • VMware (native)	• ODL • FloodLight

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What's next?

- Maintenance and evolution of the ODL plugin for openvim and the RO
- New use cases for the underlay
  - Managing tiered switching hierarchy
  - Topology discovery
  - Disaster recovery
- Advanced use cases for VNF Forwarding Graphs / service chaining

Open Source MANO

ABOUT OSM

ETSI: https://osm.etsi.org/

COMMENTS / QUESTIONS

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