NFV-MANO #3

James Won-Ki Hong, Jian Li, Seyeon Jeong

Dept. of Computer Science & Engineering

POSTECH

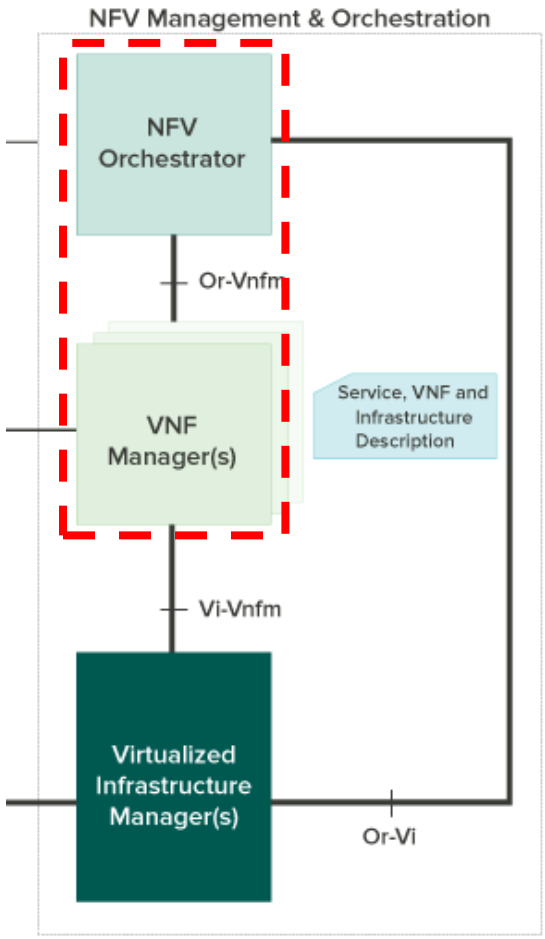
http://dpnm.postech.ac.kr/~jwkhong

jwkhong@postech.ac.kr

NFVO and VNFM

❖ Open Baton

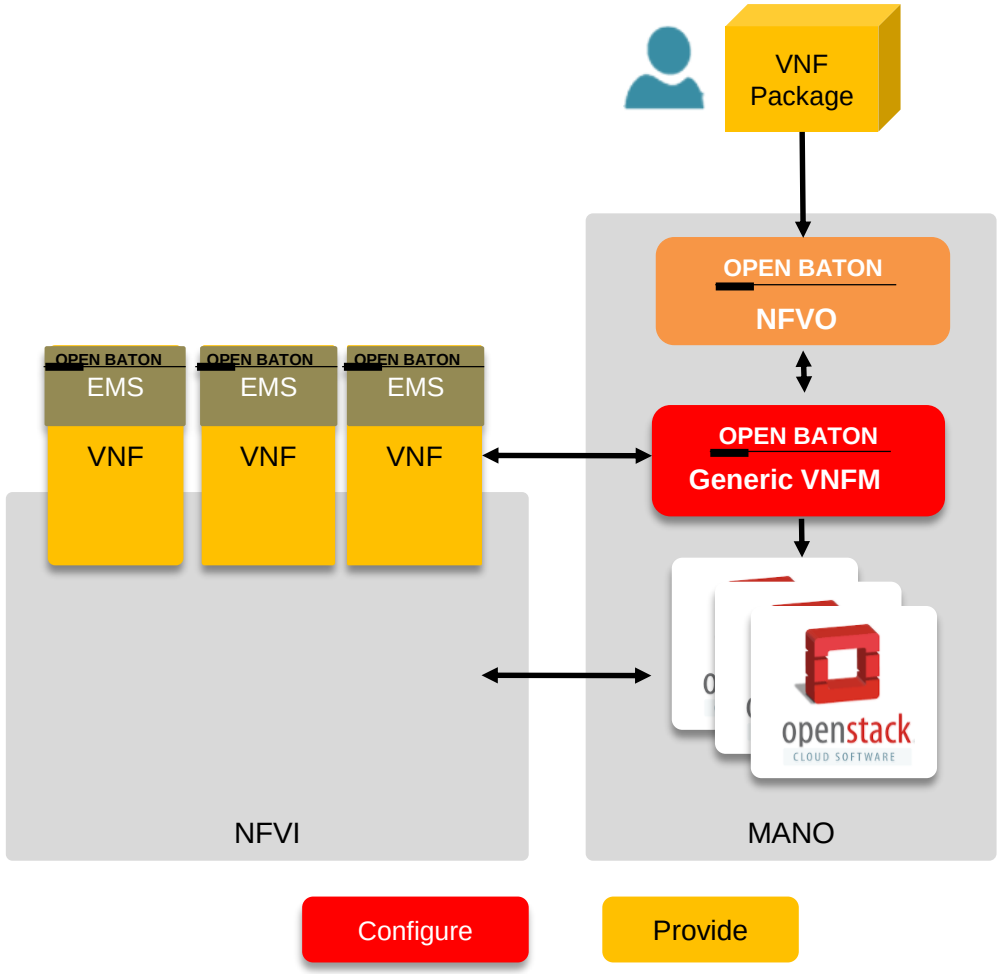
- Project led by Fraunhofer Focus and TU Berlin
- NFVO + VNFM
  - NFVO: manages the lifecycle of NSD
  - VNFM: supports both generic and specific VNFM
- Supports TOSCA templates
- Embedded auto-scaling engine
- Supports multiple VIMs
  - Integrates with OpenStack as main VIM impl.
- Provides a set of libraries
  - openbaton-libs: build your own VNFM
- Comes with a dashboard



NFVO and VNFM

❖ Open Baton

- Generic VNFM
  - Requests to the NFVO the allocation of specific resources
  - Possible operations
    - Instantiation, modification, starting and stopping of the virtual services
  - Instructs generic EMS to save and execute specific configuration scripts
  - Also works with Juju through Juju plugin
- Make use of generic VNFM for integrating own VNF
  - Implements installation scripts
  - Builds custom VNF package
  - Configures OpenBaton EMS
  - Configures generic VNFM
  - Provides VNFD
  - Provides VM images

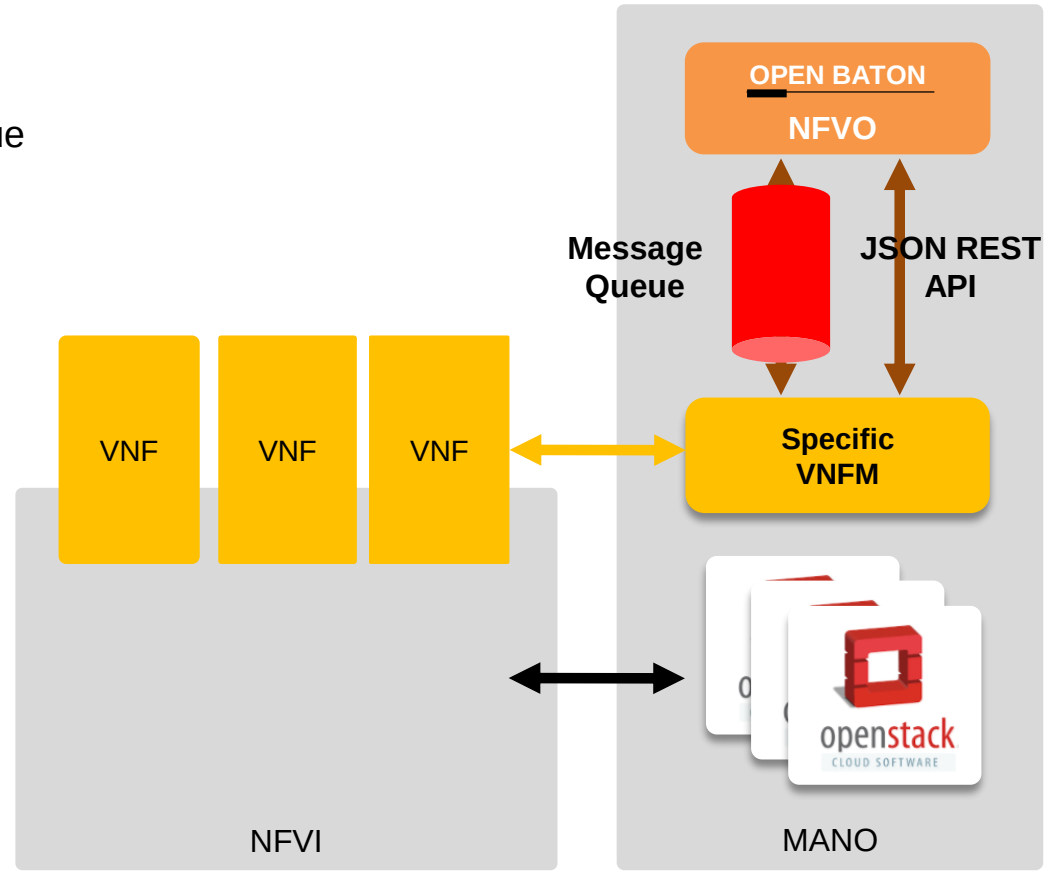


NFVO and VNFM

❖ Open Baton

- Specific VNFM
  - Two mechanisms for instantiating virtual resources
    - Directly instantiates using VIM driver
    - Requests instantiation to NFVO
  - Two mechanisms for interacting with NFVO
    - Publish/subscribe mechanism via message queue
    - RESTful API

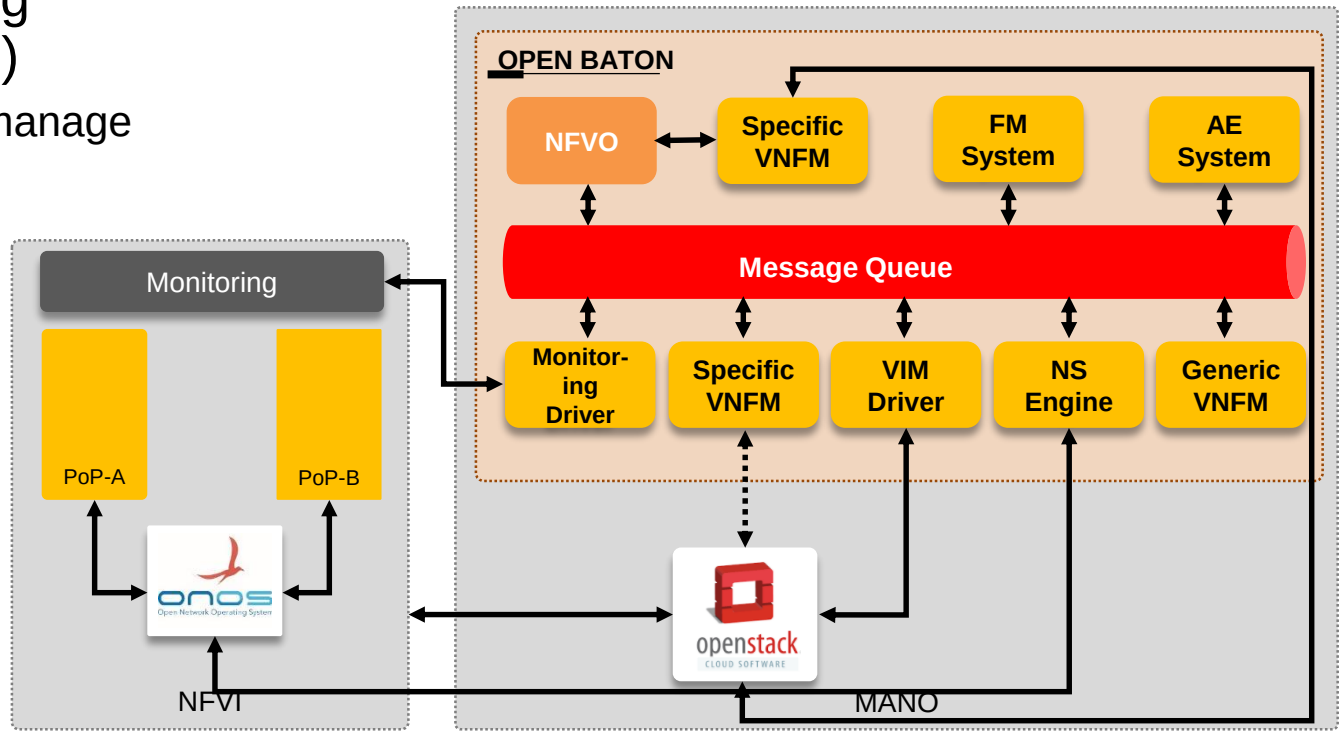
- How to implement VNFM?
  - Solution 1
    - Investigates JSON REST API provided by NFVO
  - Solution 2
    - Makes use of the OpenBaton Java SDK



NFVO and VNFM

❖ Open Baton

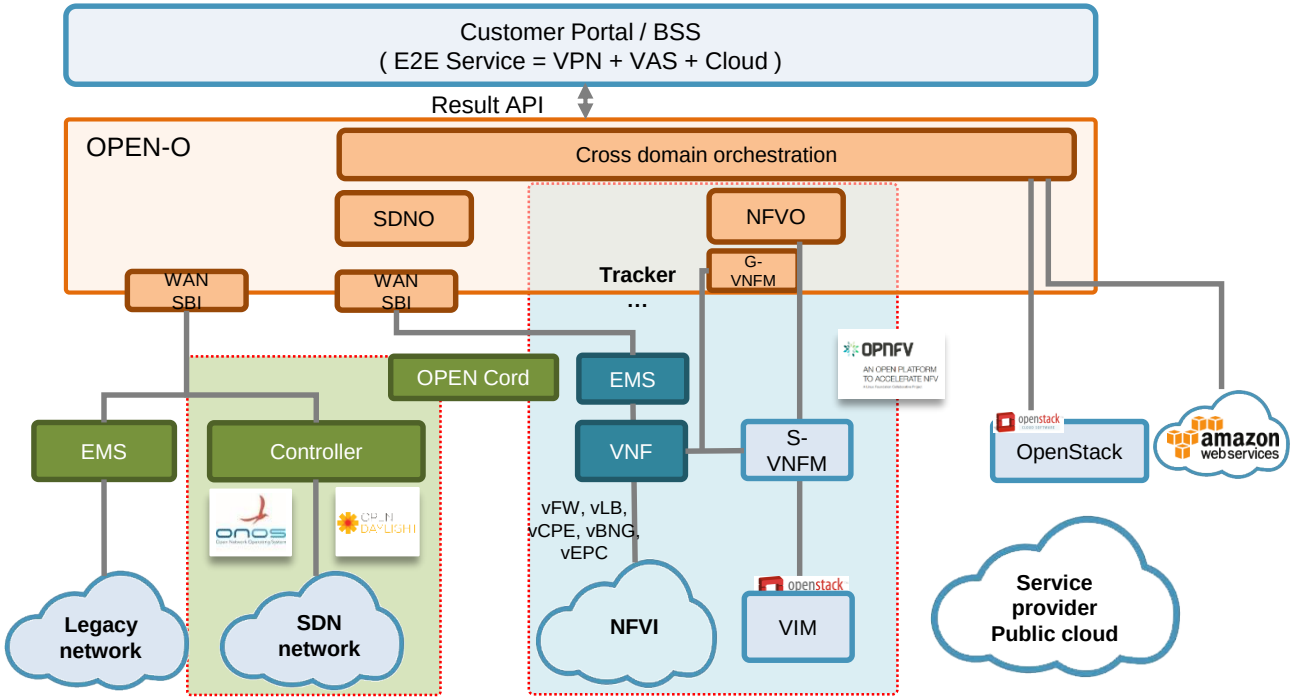
- Monitoring NFVI and VNF using Zabbix
- Scaling out using Autoscaling Engine (AE)
- Inter-VM communication using Network Slicing Engine (NSE)
  - By far only support neutron to manage network QoS

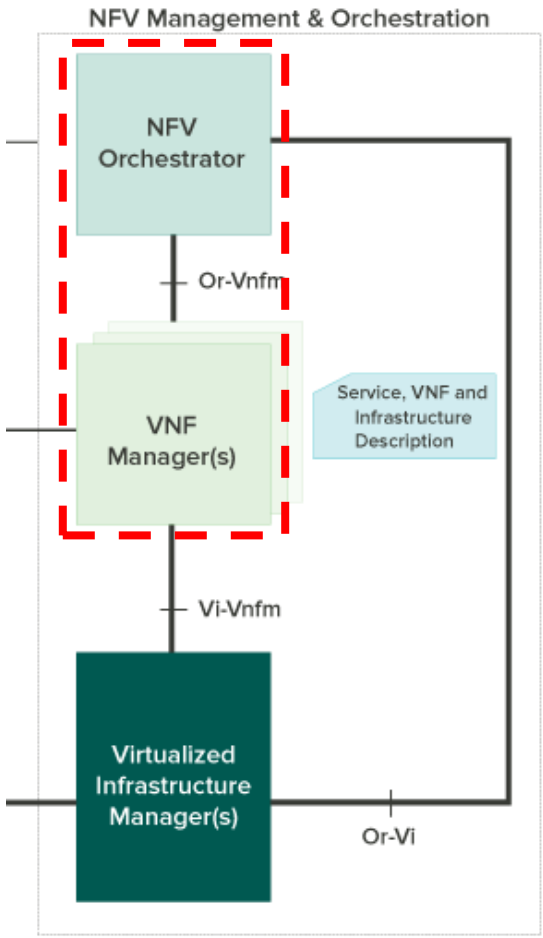


NFVO and VNFM

❖ Open-O

- Community project launched by Linux Foundation on June 2016
- OSS (Operation Support System) to OSS (Open Source Software) for carriers
- Supports NFVO, VNFM, EMS and VIM through drivers
- Still in emerging phase





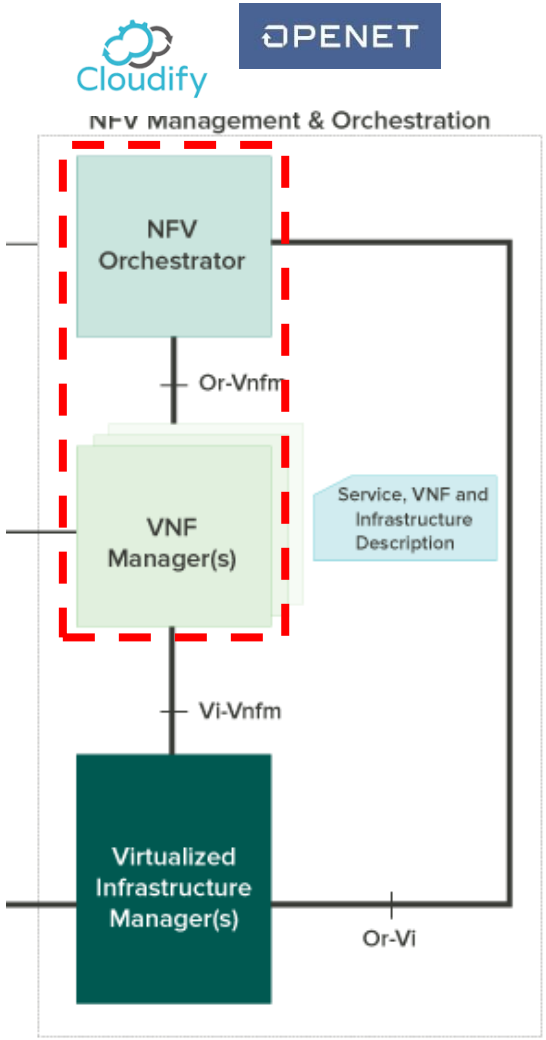
NFVO and VNFM

❖ OPENET “Weaver”

- Provides VNF life cycle management
- Supports VNFM
- API to manage all VNFs with single point of control and configuration

❖ Cloudify

- Supports TOSCA
- Supports generic VNFM
- Monitoring, log collection, healing and scaling of your deployments
- Supports a mix of containerized and non-containerized workloads



NFVO and VNFM

❖ Summary

	OpenStack Tacker	OSM	Open Baton	Open-O	OPENET Weaver	Cloudify
Community governance	✓	✓	-	✓	-	-
Apache 2.0 License	✓	✓	✓	✓	✓	✓
Release	Multiple	Release 0	v2	Not yet	1.2	3.4
Fault mgmt.	✓	✓	✓	-	✓	✓
Auto scaling	✓	-	✓	-	✓	✓
OpenStack Support	✓	✓	✓	✓	✓	✓
Other VIM	✓	✓	✓	✓	✓	✓
Support TOSCA	✓	-	✓	✓	✓	✓
Support YANG	-	✓	-	✓	-	✓

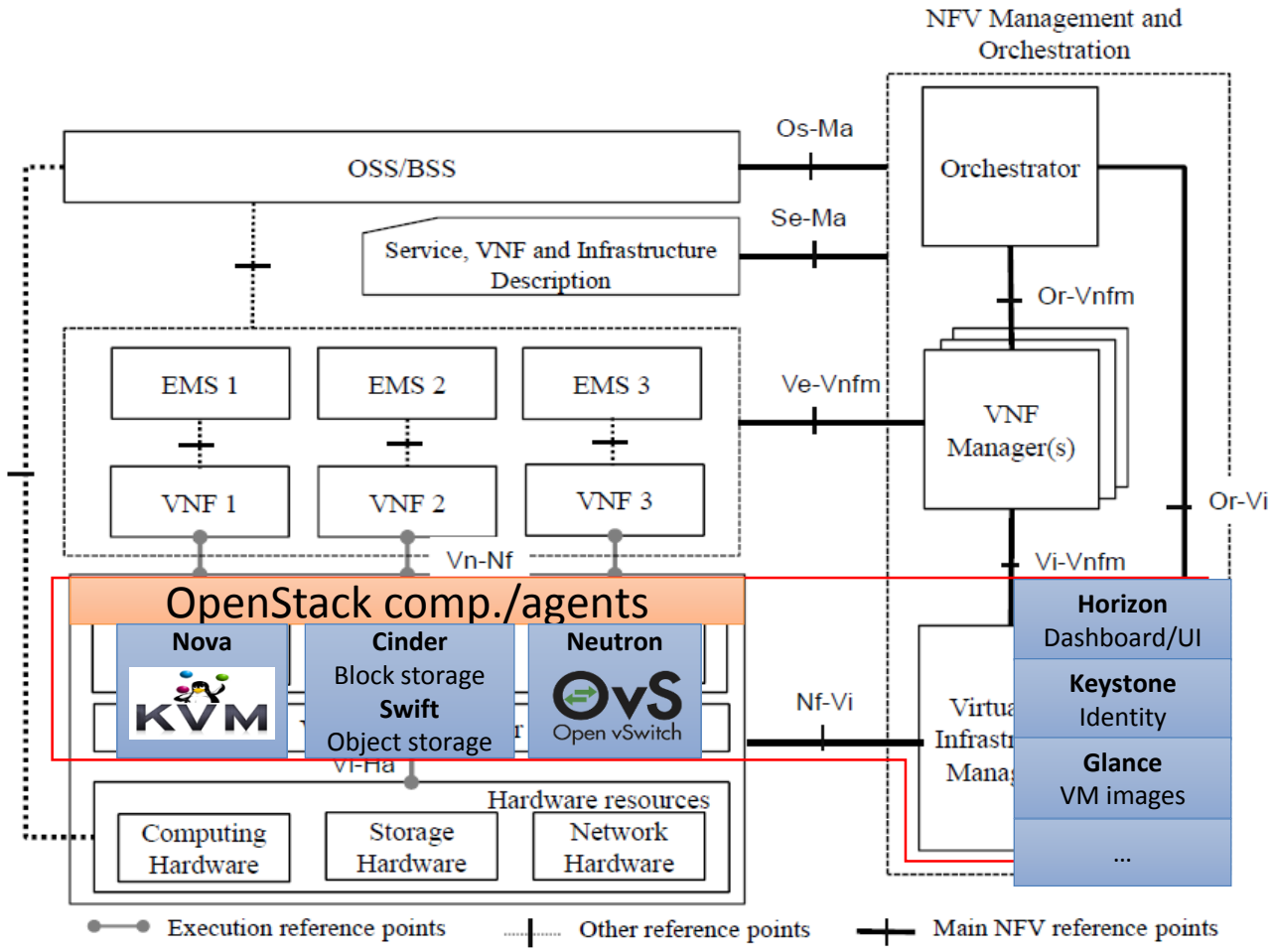
References

1. NFV-MANO: https://osm.etsi.org/
2. Tacker: https://wiki.openstack.org/wiki/Tacker
3. HEAT: https://wiki.openstack.org/wiki/Heat/Vision
4. OpenMANO: https://github.com/nfvlabs/openmano
5. OpenVIM: https://github.com/nfvlabs/openmano
6. Juju Charm: https://jujucharms.com/
7. RIFTware: https://www.riftio.com/tag/rift-ware/
8. OpenBaton: https://openbaton.github.io/
9. Open-O: https://www.open-o.org/
10. OPENET: http://www.openet.com/what-we-do/areas-we-deliver-value/nfv-realization/weaver
11. Cloudify: http://getcloudify.org/
12. OpenStack: https://www.openstack.org/
13. TOSCA: https://www.oasis-open.org/committees/tosca/

Virtual Infra Manager (VIM)

❖ OpenStack

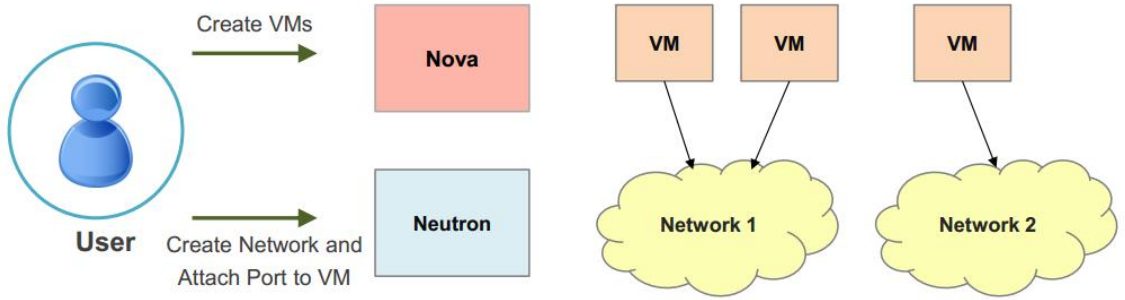
- Typically the VIM is implemented using OpenStack as a baseline



Virtual Infra Manager (VIM)

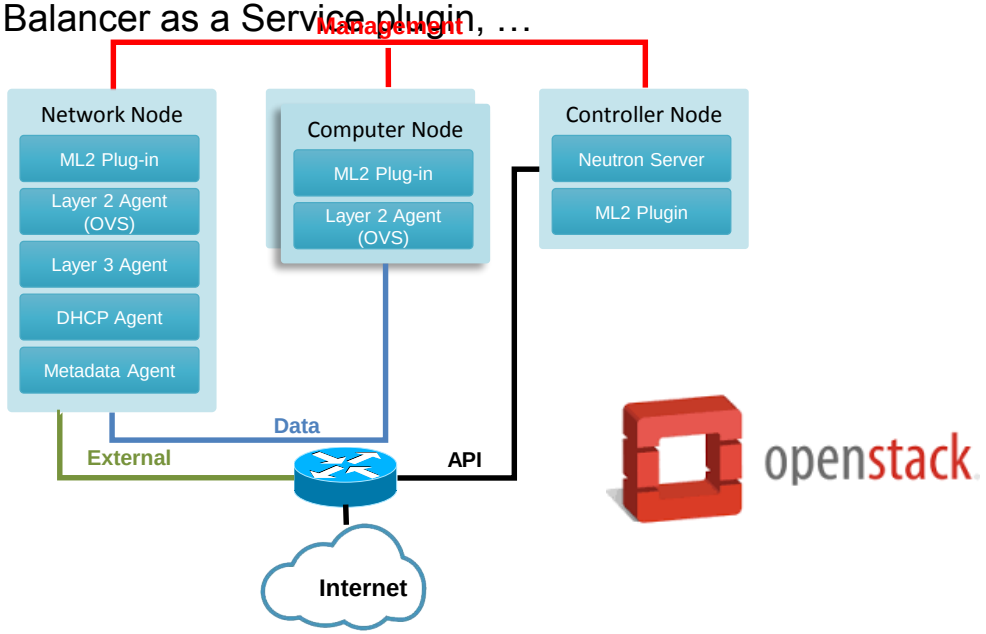
OpenStack Nova

- Creates VM instances



OpenStack Neutron

- Creates virtual networks and connects VMs with the networks
- Configures the virtual network through the Neutron APIs (as a service)
- Supports various networking services and devices (plugin/agent)
  - L3 / OVS agent (L2), VPN / Load Balancer as a Service plugin, …



Virtual Infra Manager (VIM)

❖ OpenStack Open vSwitch (OVS) Agent

- VM - VM traffic
  - Within the same compute node
  - Between different compute nodes
- GRE-based overlay networking
- Can cooperate with L3 agent and 3rd party plugins
  - L3 Routing, NAT, SDN controllers, DPDK, …