OVN for OPNFV

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LINUX FOUNDATION
COLLABORATIVE PROJECTS

Agenda

- Pre-OVN
- What is OVN?
- OpenStack & OVN
- OVN on ETSI NFV Architecture
- ovn4nfv proposal

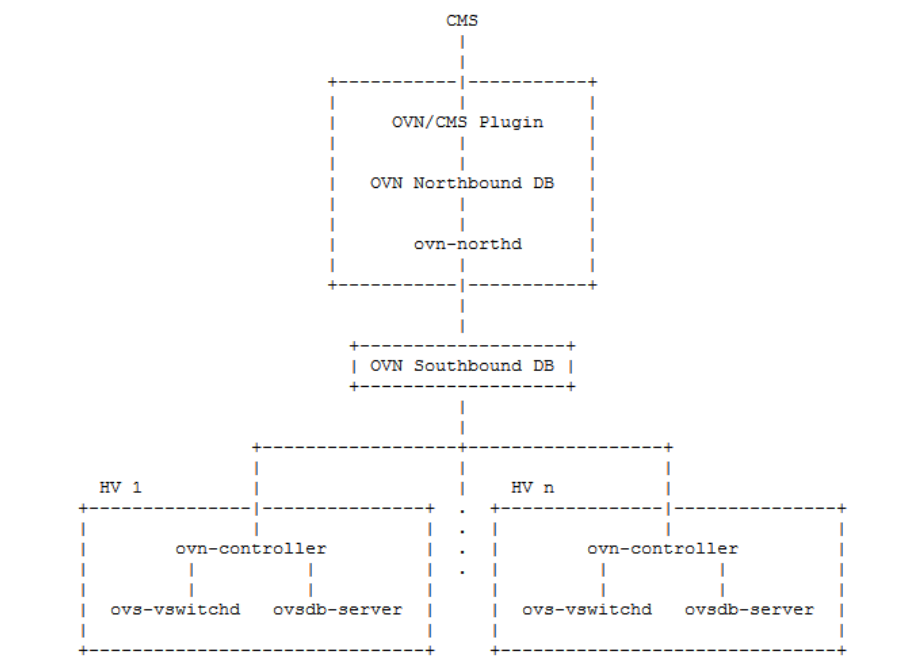
Pre-OVN

- No abstraction of logical networks
  - Configure both the tunnels and flow rules
  - Manage ovsdb and Open Flow connections
- Manage complex flow rules
  - Flow priorities
  - Flow explosion
- OVS – unit of distributed switch with complex state stored in neutron plugin
- No support for ARP Suppression or Multicast optimizations

What is OVN? – Native virtual networking for OVS

- Local controller
- Logical network abstraction
  - Simplifies overlay setup
- Supports:
  - Logical L2/L3
  - Security groups/ACLs
  - Multicast optimizations
- L3/ACLs are faster when implemented using OVN
- Support for Containers
- ARP Suppression

OVN Architecture



Adapted from [1]

The Magic! – Logical Flows -> Physical Flows

- Distributed transformation using ovn-controller
- Divide & Conquer
  - ovn-controller uses multiple tables
    - Table 0, Physical -> Logical ingress port mapping
    - Table 16 – 31, Ingress logical flows tables
    - Table 32 – 47, Send packet to local or remote hypervisor
    - Table 48 – 63, Egress logical flow tables
    - Table 64, Logical -> Physical egress port mapping
  - Meta-data is passed between tables
    - tunnel key, logical dpid, logical in port & out port, VLAN ID

Big picture – what is happening?

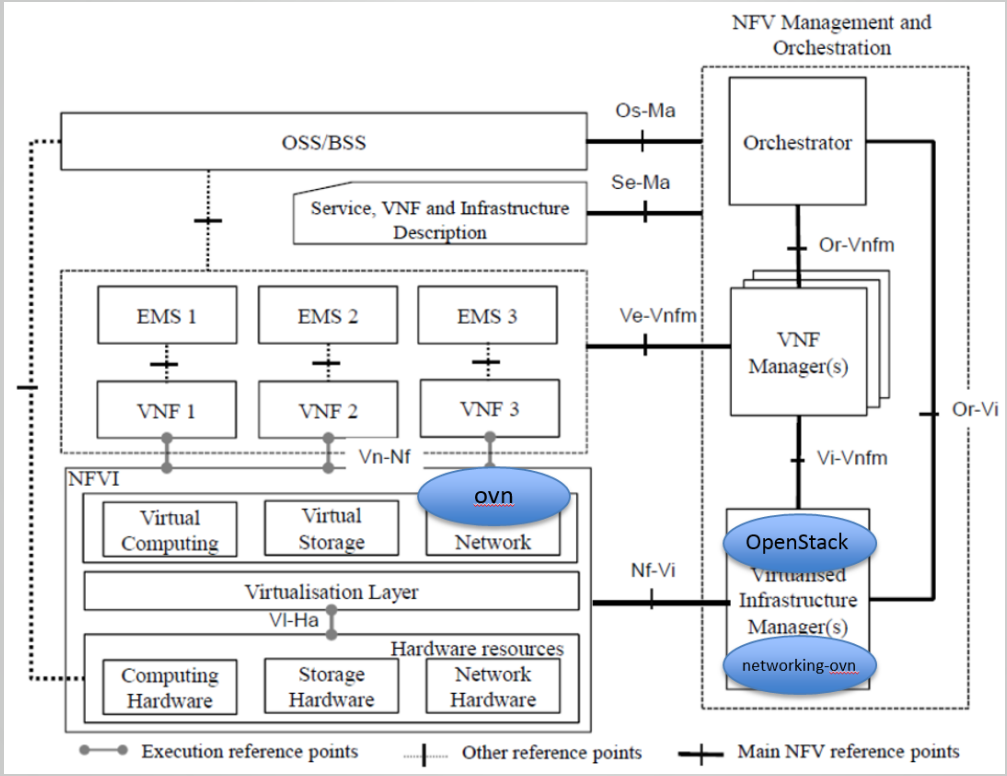
- OpenStack neutron plugin focus on OpenStack API
  - Security Groups/Rules for logical networks
  - Container Integration
  - DVR/L3
- OVN development
  - Solving the hard networking problems
  - Simpler API for neutron plugin developers
  - Functionality of neutron agents moving into OVN

Neutron and OVN => Agentless lean networking

OpenStack & OVN

- networking-ovn - https://git.openstack.org/openstack/networking-ovn.git
  - networking-ovn updates Northbound DB with logical flow rules in response to neutron api calls
  - ovn-controller updates chassis id, interface id and tunnel listen ip address in Southbound DB
  - ovn-northd updates Southbound DB with logical flow rules
  - ovn-controller takes updates from Southbound DB and transforms them to rules for the local Open vSwitch
  - ovn-controller updates ovsdb-server and ovs-vswitchd

OVN on ETSI NFV Architecture



Constructs for ETSI NV

Constructs	ovn	networking-ovn	OpenStack Target Release
Logical L2	supports	supports	Mitaka (April 7th 2016)
DHCP agent	coming soon	coming soon	Mitaka
L3/DVR	supports	coming soon	Mitaka
ACLs	supports	supports	Mitaka
SFC	needs work	needs work	Mitaka (high risk)
LBaaS	needs work	needs work	TBD
multi-site	needs work	needs work	TBD
HA	needs more work	needs more work	TBD

SFC – The most desired feature for NFV

- **Plan** – Implement networking-sfc api in networking-ovn
- Design discussions on openvswitch & neutron mailing list
- Would like Tacker to support networking-sfc api driver

ovn4nfv – Let's turn it on in OPNFV

- Project name: ovn4nfv (proposal stage)
- Category: Collaborative Development
  - Contribute to upstream projects: openvswitch, networking-ovn, tacker and networking-sfc
- Project Goal: This project will enable OVN as another option for network control in OPNFV
- Committers: Vikram Dham, Russell Bryant, Lingli Deng, Wenjing Chu, Gal Sagie
- For demo - ovn4nfv project breakout - https://wiki.opnfv.org/events/2015-designsummit-proj-breakouts

ovn4nfv - Schedule

- B release
  - PoC showcasing L2/L3/DHCP agents
  - Investigate SFC implementation options
- C release
  - Include OVN & networking-ovn in Genesis
  - Enable L2/L3/DHCP agents
  - SFC development
  - Enable in Pharos labs
  - Investigate requests from requirements project

Participate

- Contributors welcome!
  - Exciting work
- Users/ Service Providers/ Telcos welcome!
  - Option to use a lean network controller

Credits

- Credits
  - Russell Bryant for valuable feedback
  - OVN, networking-ovn and networking-sfc developer communities

Q & A

Thanks

References

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