openstack.

May 2018

OpenStack Networking

Project Update, OpenStack Summit Vancouver

Miguel Lavalle, IRC mlavalle

openstack.

Miguel Lavalle

Huawei

Queens and Rocky Neutron PTL

HUAWEI

What is OpenStack Networking?

Mission:

"To implement services and associated libraries to provide on-demand, scalable and technology agnostic network abstraction"*

NEUTRON

an OpenStack Community Project

* Source: https://governance.openstack.org/tc/reference/projects/neutron.html

Why OpenStack Networking?

- In the beginning, networking constructs baked into Nova (OpenStack Compute)
- Need to give users control over network topology/technologies and service insertion
- Provide multi-tenancy and scalability

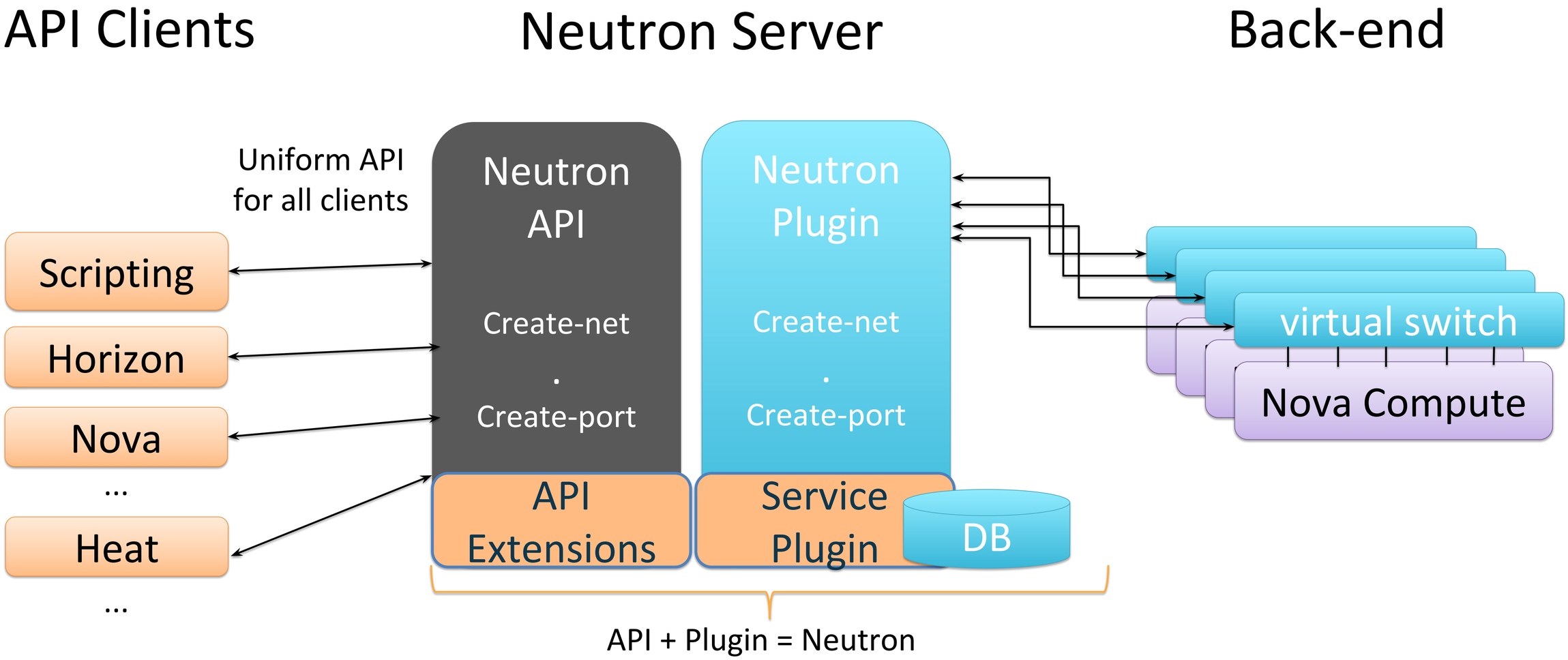
openstack.

OpenStack Networking background

- Founded during Diablo release of OpenStack
- 240 contributors committed code to the Neutron group of projects for the Queens release
  - 107 to Neutron core
- 86% of OpenStack production deployments use Neutron*

* Source: https://www.openstack.org/analytics OpenStack User Survey - 2017 (Jun - Dec)

OpenStack Networking high level architecture



Neutron Stadium

- Set of projects overseen by the Neutron core team
  - Architecture guidance, API reviews, release management, gate/infra, ...
- Sub-projects, in return, pledge to be:
  - Well documented (user, admin, developer)
  - Well tested (unit, functional, integration)
  - With stable branches
  - With an upgrade strategy
  - Modular and composable with other neutron building blocks
  - With `openstack` enabled CLI and API bindings
  - ...and moreover: **OPEN SOURCE from the ground, up**

openstack.

Neutron Stadium

- Backends
  - networking-midonet
  - networking-odl
  - networking-ovn
  - networking-bagpipe
- APIs
  - networking-bgpvpn
  - neutron-dynamic-routing
  - neutron-fwaas
  - neutron-vpnaas
  - networking-sfc
- Libraries
  - neutron-lib
  - neutron-tempest-plugin
  - ovsdbapp
- Clients
  - python-neutronclient
- Dashboards
  - neutron-fwaas-dashboard
  - neutron-vpnaas-dashboard
- Specifications
  - neutron-specs

OpenStack Networking Queens features

- Neutron core
  - Quality of service bandwidth limit rules for floating IPs
  - Logging of events for security groups
  - API support for filtering ports with IP sub-strings
- VPNaaS
  - Admitted VPNaaS back in the Neutron Stadium after meeting all the requirements
  - Integrated with neutron-l3-agent. No need for a separate binary anymore
- FWaaS
  - Support of L2 VM ports and l3 router ports
  - FWaaS co-exists with Neutron security groups
- Neutron Tempest plug-in

OpenStack Networking Queens features (cont.)

- networking-ovn
  - Support binding of direct(SR-IOV) ports
  - DVR support
  - Automatic L3HA support
- networking-odl
  - Support hardware offload via SR-IOV. It allows binding direct (SR-IOV) ports
  - Migrated to Zuulv3
  - ODL Nitrogen support
- networking-bgpvpn
  - BGPVPNs of both type L2/E-VPN and L3/IPVPN are now supported with Neutron ML2 reference drivers, for both OVS and linuxbridge
  - `bgpvpn-routes-control` API extension: control of routing with a finer grain, including API-defined static routes, or BGPVPN route leaking
  - New `vni` optional attribute to control the VXLAN VNI with E-VPN

OpenStack Networking Queens features (cont.)

- networking-bagpipe
  - Evolution to support new features in networking-bgpvpn
  - Driver introduced for the networking-sfc project
- networking-sfc
  - Introduced new API resource, Service Graphs. Based on IETF SFC Encapsulation, this construct allows Port Chains to be linked together, forming dependencies between them (beyond simple flow classification). This is also known as Reclassification and Branching
- networking-dynamic-routing
  - Support of 4-byte AS Numbers now

openstack.

OpenStack Networking Rocky

- Neutron core
  - Multiple port bindings to support VM migration
  - Port forwarding for floating IPs
  - Strict minimum bandwidth support
  - Improve predictability of API response on invalid query parameters
  - Change configuration options without a service restart (mutable configuration)
- neutron-lib
  - De-couple DB layer access from Neutron core

OpenStack Networking Rocky (cont.)

- FWaaS
  - Pluggable backend driver
  - Remote firewall groups
  - Events logging
  - Address groups
- VPNaaS
  - Support newer version of libreswan (>= 3.17)
  - QoS support for VPNaaS
  - Removal of unmaintained drivers
- networking-midonet
  - Hardening the software for improved reliability

OpenStack Networking Rocky (cont.)

- networking-odl
  - fullsync and recovery in case of ODL failure
  - L3 flavor driver
  - Adding ODL oxygen support, retiring ODL carbon support
  - ODL DHCP server support(instead of dhcp-agent)
- networking-ovn
  - Port groups
  - Migration tool from ML2/OVS to ML2/ovn-networking
  - Enhancing scalability of security groups
  - Documentation improvement
- networking-bgpvpn
  - Implement support for Router Association advertise_extra_routes attribute
- networking-bagpipe
  - Improved support for load-balancing for BGPVPN IPVPNs with OVS

Cross-Project Work

- Multiple port bindings to support VM migration
- Strict minimum bandwidth support

Beyond Rocky

- Neutron to Neutron interconnection
  - https://specs.openstack.org/openstack/neutron-specs/specs/rocky/neutron-inter.html
- Extend FWaaS API to:
  - Associate with more resources
  - Associate dynamically with VMs using VM name and labels
- Preparing for Python 3 only world

openstack.

How to give feedback

- On a continuous basis
  - Attend the weekly Neutron IRC meeting:
    - Monday at 2100 UTC freenode channel #openstack-meeting on even weeks
    - Tuesday at 1400 UTC freenode channel #openstack-meeting on odd weeks
  - File a bug in https://bugs.launchpad.net/neutron
    - Process in place to continuously triage bugs
    - If the bug is new functionality, we will classify it as RFE (Request For Enhancement) and discuss it during the Neutron Drivers meeting (open to everybody) that takes place in freenode #openstack-meeting on Friday at 1400 UTC
  - Send a message the to the mailing list
  - Talk to us in freenode #openstack-neutron

How to contribute

- Attend the Neutron weekly IRC meeting in freenode #openstack-meeting: Monday at 2100 UTC on even weeks, Tuesday at 1400 UTC on odd weeks
  - We devote a section of the agenda to advertise beginner level RFEs (Request For Enhancements) that have been approved for implementation
- Talk to us in freenode #openstack-neutron
- Read the contributors guide: https://docs.openstack.org/neutron/latest/contributor/index.html

openstack.

Q&A

Thank you!

 openstack  @OpenStack  openstack  OpenStackFoundation