openstack.

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OpenStack Networking

Project Update, OpenStack Summit Sydney

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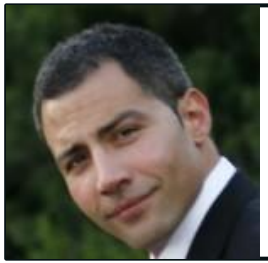

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What is OpenStack Networking?

Mission:

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

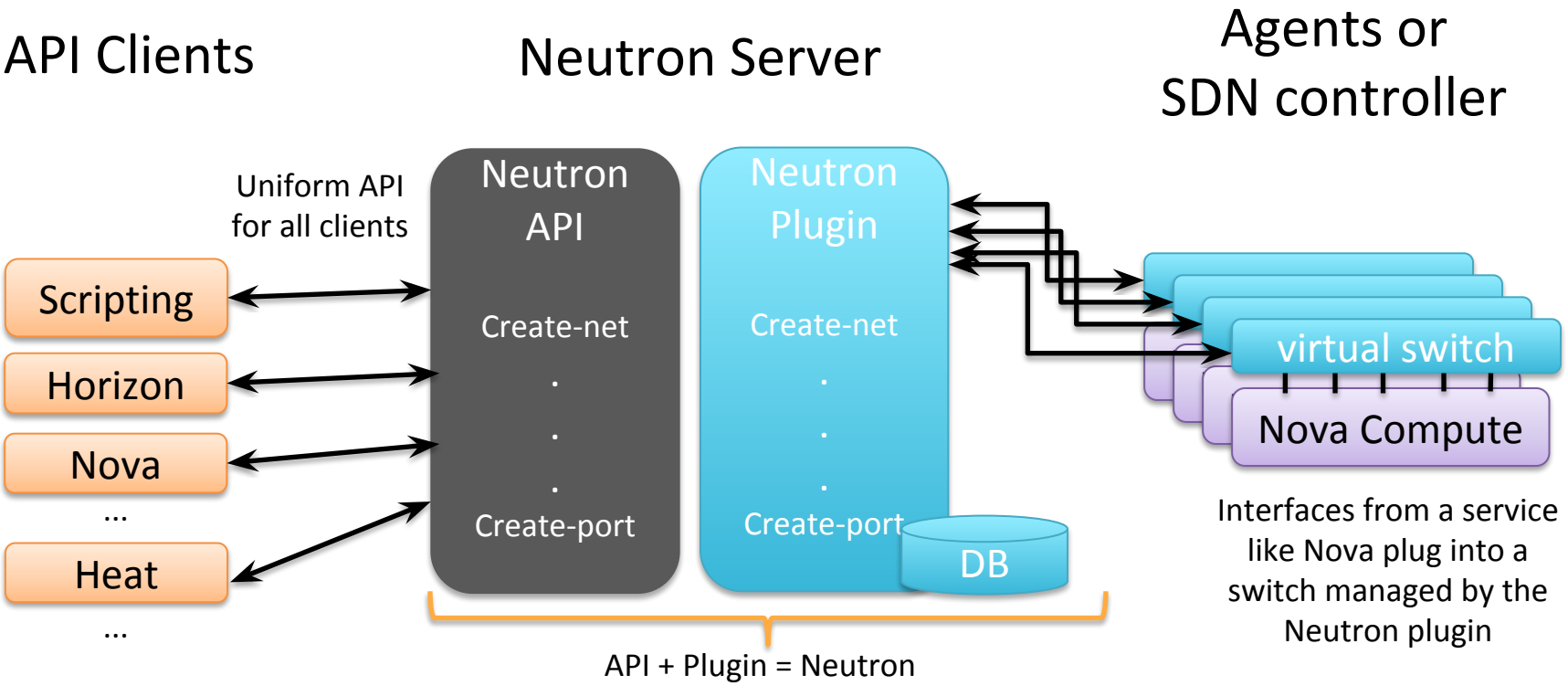
NEUTRON

an OpenStack Community Project

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 Networking high level architecture



OpenStack Networking background

- Founded during Diablo release of OpenStack
- ~200 contributors to Neutron core for Pike release; 1300+ overall contributors
- Latest user survey adoption numbers: 95%*

* Source: https://www.openstack.org/assets/survey/April2017SurveyReport.pdf

Project governance

- Project management overseen by neutron core team
  - Arch 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 and observe stable policy
  - 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**

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  - ...and moreover: **OPEN SOURCE from the ground, up**
  - **In a nutshell: they follow practices as adopted by neutron core**

OpenStack Networking background

- Backends
  - Midonet
  - OpenDaylight
  - OVN
  - BAGPIPE
- APIs
  - BGPVPN
  - Dynamic Routing
  - Firewall as a Service
  - Service Function Chaining

OpenStack Pike Features

- Operational improvements
  - Support for zero-downtime upgrades from Ocata (a.k.a rolling upgrades)
  - Reduced memory footprint for Metadata Agent
  - Improved stability of the OVS openflow-based firewall
  - Push notifications between Server and L2 Agents
  - Fine grained quota details available
  - Tagging mechanism available to more resources
  - Integration with external watchdog for port data plane status
  - Network MTU can be controlled by projects

OpenStack Pike Features (cont.)

- L3 improvements
  - New DVR deployment model: Centralized Floating IPs (DNAT) +Distributed E/W
  - Support for Active/Active VRRP + DVR
  - DHCP agent support for subnets on other segments of a routed network
  - DNS name assignment on a per-port basis
- QoS improvements
  - Support of a direction parameter for bandwidth limit rules
  - Bidirectional bandwidth limit rules in the OVS and Linux Bridge drivers
  - New API to retrieve details of supported QoS rule types by the loaded drivers
  - A QoS policy marked as the default for all the networks created under a project
  - QoS policies set on an external network now apply to external router ports (DVR or not)

OpenStack Pike Features (cont.)

- Stadium efforts
  - Bagpipe: native client support
  - Midonet: os-vif support, deprecation of monolithic plugin
  - OpenDaylight: native DHCP, QoS v2, ceilometer support
  - OVN: SSL support for OVN database connections

OpenStack Queens

- Stability and community-led improvements
  - Python3 compatibility
  - Testing coverage improvements
  - Neutron-Lib adoption
  - Multiple port bindings
- Key Features
  - QoS on Floating IPs
  - QinQ
  - Security Groups logging
  - FWaaS

OpenStack Rocky

- Key Features
  - QoS guarantees in Nova placement API
  - Floating IPs for router networks
  - Iptables/OVS Firewall Migration
- Request for enhancements
  - OpenFlow-based DVR
  - Policy-based Routing
  - Auto-topology enhancements

Cross-Project Work

Optimization of Nova instances migration with multiple port bindings

- Currently, port binding is triggered in the post_live_migration stage, after the migration has completed. If the binding process fails, the migrated instance goes to error state
- Proposed solution is to allow multiple port bindings. A new inactive port binding will be created in the destination host during the pre_live_migration stage. If this step succeeds, then the migration proceeds
- Once the instance is migrated, the destination host port binding will be activated and the instance and binding in the source host will be removed
- This will also minimize the interval with no network connectivity for the instance

How to give feedback

- During the summit
  - Attend the “Neutron pain points” session on Wednesday 8th at 2:40pm, Level 4 - C4.9
- 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 Thursday at 2200UTC (even weeks) and Friday at 1400 UTC (odd weeks)
  - Send a message the to the mailing list
  - Talk to us in freenode #openstack-neutron

How to contribute

- Come and meet us personally in the Neutron on-boarding session for new contributors, room C4.7 November 6th at 1:50pm
- 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

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Q&A

Thank you!

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