SRIOV in the OpenStack

Intel
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Background

# History

H release
PCI ready

I release
Discuss

J release
Bug fix/CI

K release
CI

OpenStack

REST API

NOVA
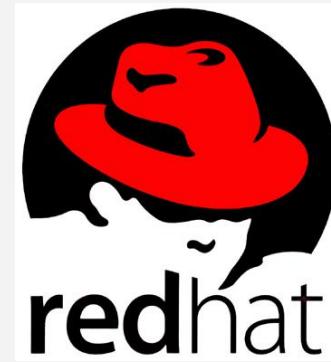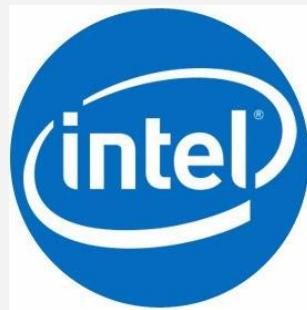
Neutron
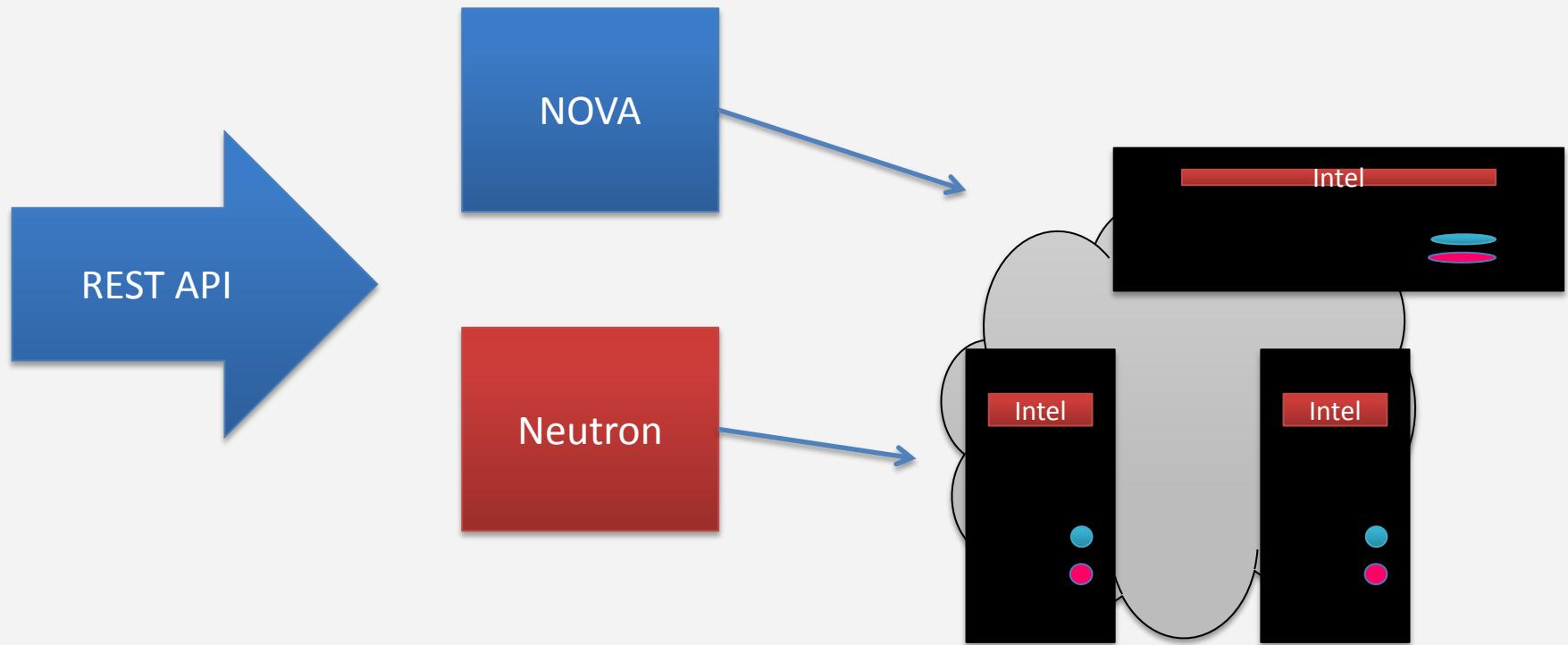
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PCI: on Nova Neutron

ESTI NFV
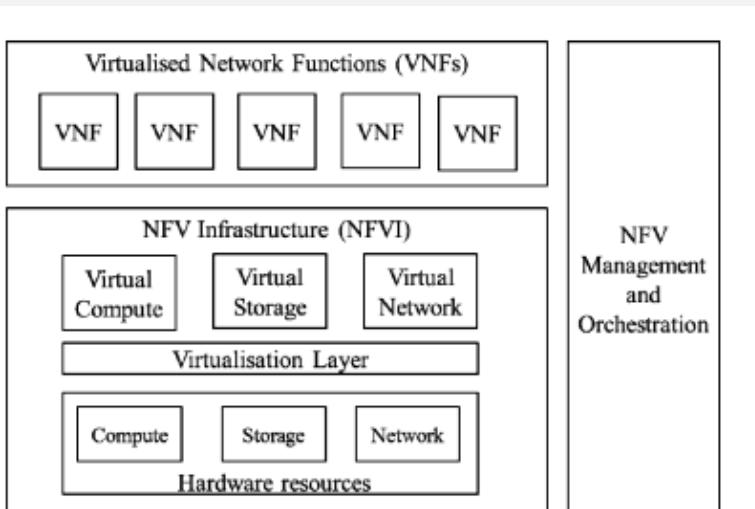
Figure 1: High-level NFV framework

- NFV (Network Function Virtualization)
  - Neutron
    - Service VM
    - FWaaS
  - Nova

  - ## PCI SR-IOV (nic)
    - NUMA, large page and cpu-pinning
    - Intel 3rd party CI
    - QoS (CPU and memory)
  - Glance
    - OVF image meta data

PCI SRIOV

System virtualization
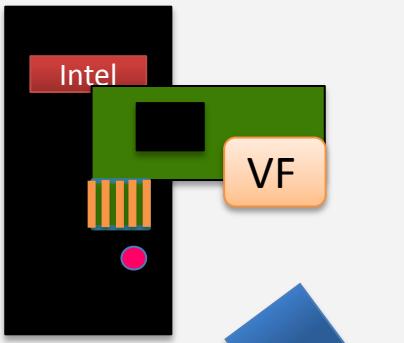
Network virtualization

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VF

VEB/HWVEB/VEPA

EVB: edge virtual bridging
VEB: virtual Ethernet bridge
VEPA: virtual Ethernet port aggregator
(8021.QBG, vlan)
QBH(fade out)/BR
HWVEB(vlan)

openstack™
CLOUD SOFTWARE

EVB: edge virtual bridging
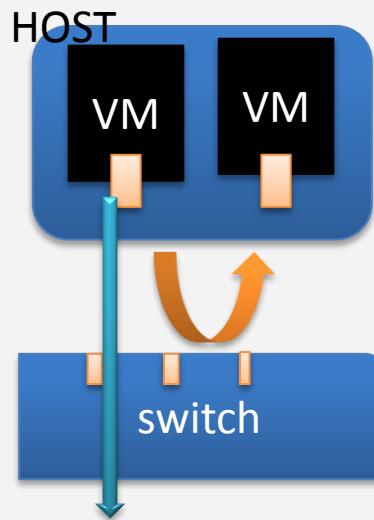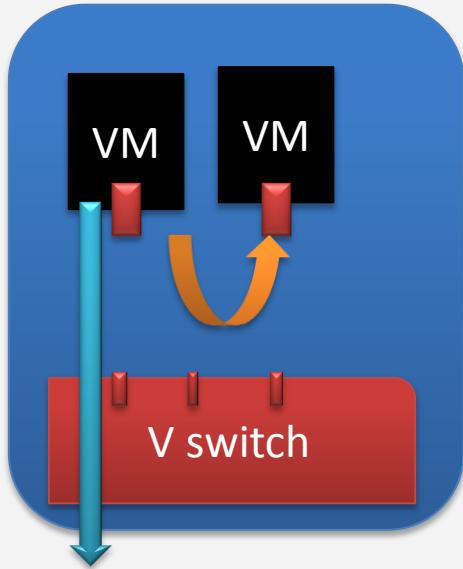
VEB: virtual ether bridge
OVS/Linux bridge …

802.1qbg
802.1BR
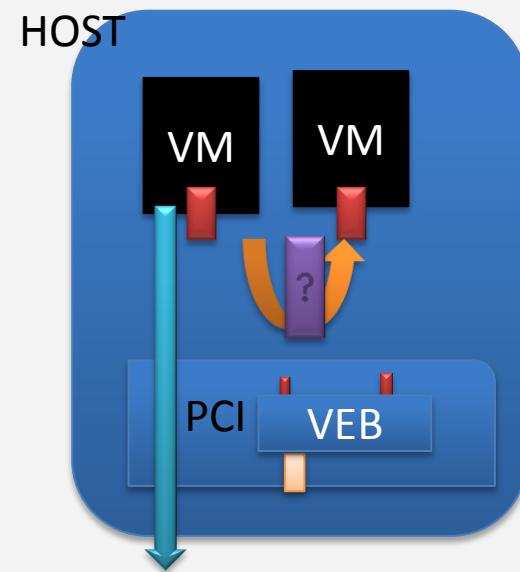
HW-VEB in SRIOV NIC

Features Sets of SRIOV

802.1BR(QBH)
802.1QBG(partly)

HWVEB

Macvtap
Direct
(virtio: None PCI)

Network alternative

Device alternative

Design & Implement

Overview
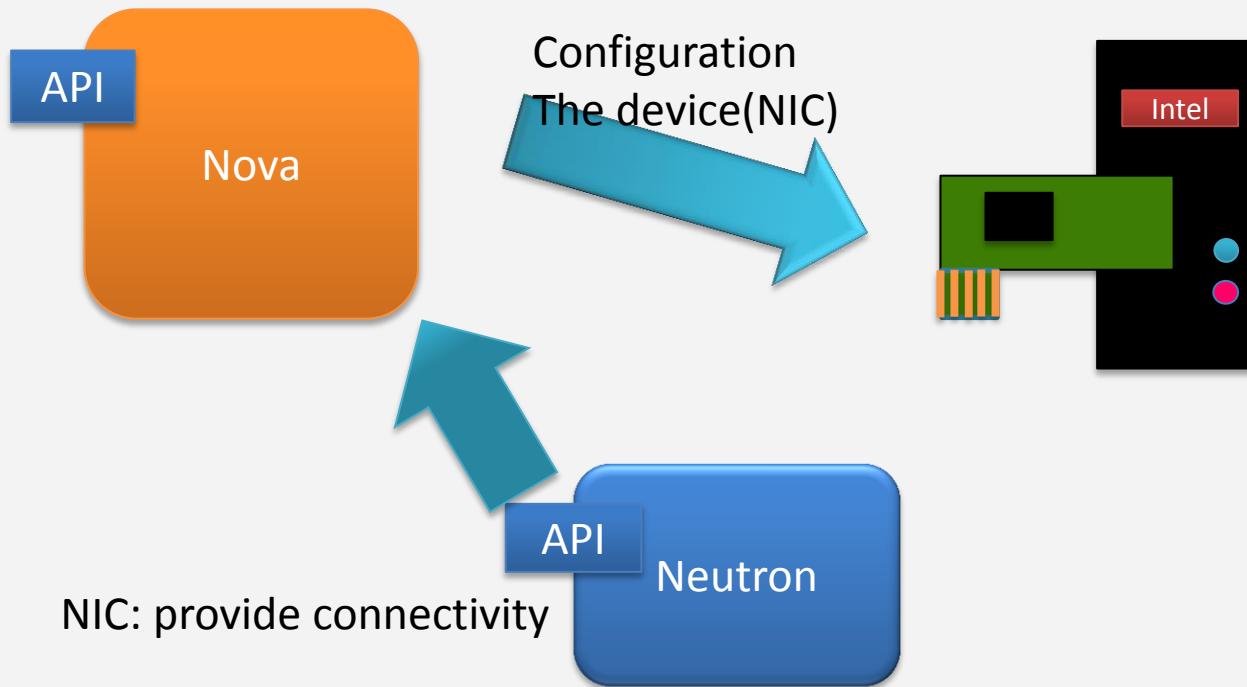
Regular PCI Pass-through

Nova CLI

NOVA WSGI

Nova Schedule

PCI scheduler

Compute
(destination machine)

DB Object Mode

White List

PCI DB

SRIOV

Rest-API

Request **w/ID**

PCI scheduler

Nova   Compute

Setup network Interface

Neutron

White list enhancement
Match:., *
Dev name:ethx
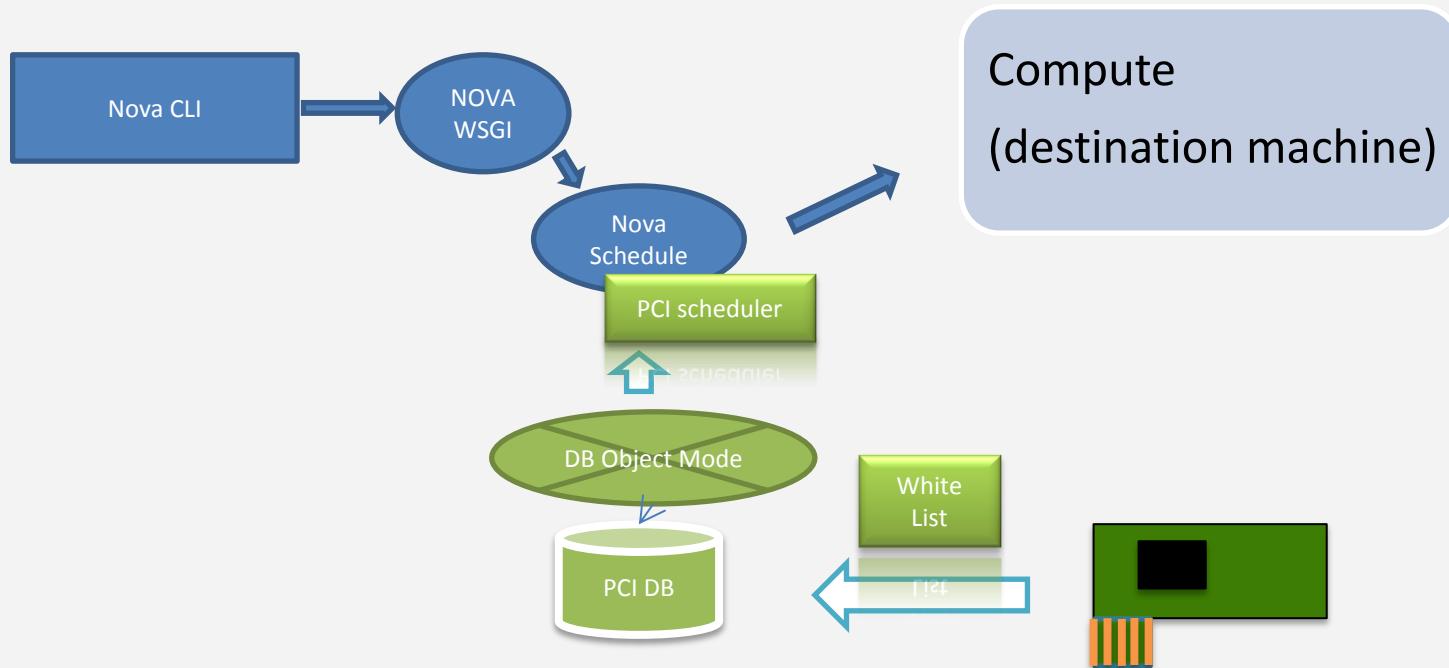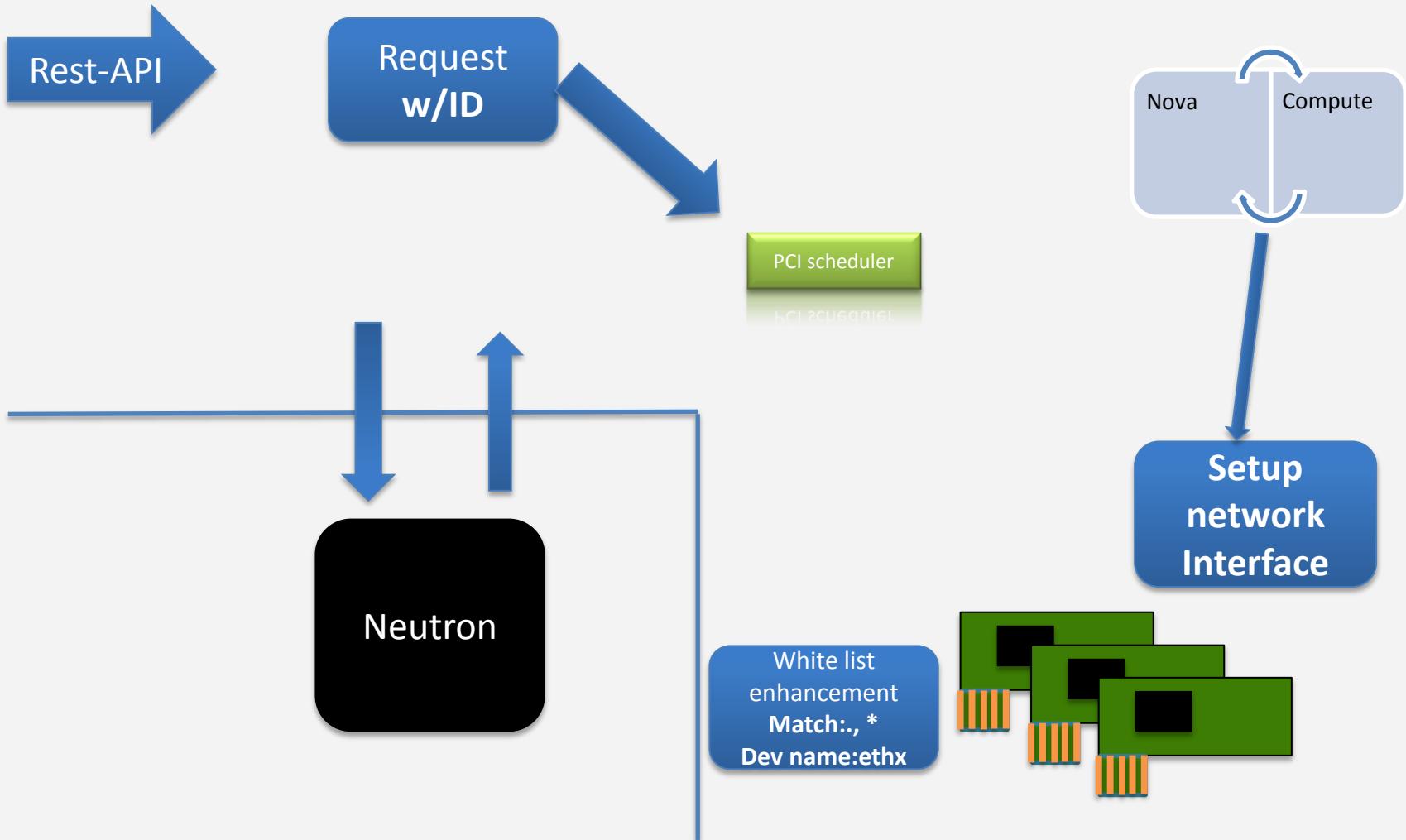
Task list

- Live Migration
- CI: Testing(completed)
- harden
- Hot plug
- Resource management refactoring
- Choose subset device/quota/ordered attach/least feature filter
- Feature set schedule
- Request span multiple devices

谢谢