

Neutron network trunks

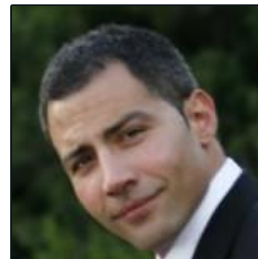
For VMs, containers and bare metal nodes

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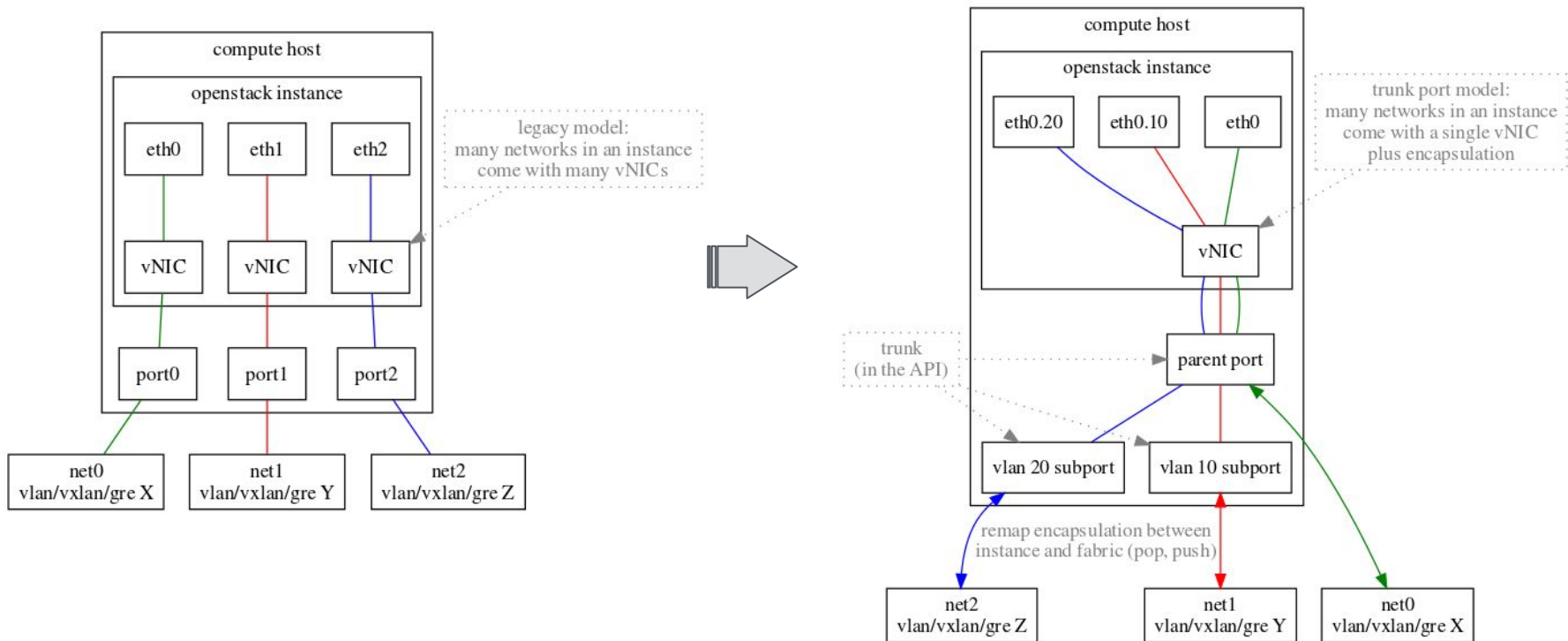
ERICSSON



Agenda

- Rationale
- Proposed solution
- Community effort
- Building blocks
- Q&A
- Further pointers

Rationale



Rationale

- Compute workload requires to connect to many networks at once
 - Virtual Machines
 - VNFs dynamically need to connect/disconnect from networks
 - Neutron Networking-sfc
 - Containers running in VMs need Neutron connectivity and isolation
 - OpenStack Magnum
 - Bare metal nodes
 - Allow flexibility for physical nodes with hardwired connectivity
 - OpenStack Ironic

Proposed solution

- Keep Neutron Port API unaffected
- Keep Nova/Neutron interaction unaffected (*)
- Introduce Trunk resource concept
 - Trunk has one parent port
 - The parent port is what connects the instance
 - Trunk has zero or many sub-ports
 - Each sub-ports **maintains/inherits** segmentation details (ID and Type)
- (*) OVS-agent based implementation, which requires Neutron to push bridge name

Community effort

- Design tenets
 - Modularity - e.g. minimal impact to ML2
 - Performance - $O(1)$ instance boot time (i.e. not affected by # networks connected)
- Loosely coupled driver-based framework allowed rapid productization of drivers for:
 - Newton
 - OVS, LinuxBridge, OVN
 - Ocata
 - OpenDaylight, VMware
 - Pike
 - Dragonflow

Building blocks

CLI verb (openstack client) ↕	HTTP method ↕	URL ↕
network trunk create	POST	/v2.0/trunks
network trunk delete	DELETE	/v2.0/trunks/\$trunk_id
network trunk list	GET	/v2.0/trunks
network trunk show	GET	/v2.0/trunks/\$trunk_id
network trunk set	PUT	/v2.0/trunks/\$trunk_id
network trunk set --subport	PUT	/v2.0/trunks/\$trunk_id/add_subports
network trunk unset --subport	PUT	/v2.0/trunks/\$trunk_id/remove_subports
network subport list	GET	/v2.0/trunks/\$trunk_id/get_subports

Building blocks

- Workflow
 - Create networks
 - Create ports
 - Create trunk
 - Use ports as created to form logical topology of the trunk
 - Pay attention to your MAC addresses!
 - Boot instance with parent port
 - Adjusting trunk dynamically does require guest cooperation external to Neutron
 - Can boot instance to trunk dynamically (depends on backend)

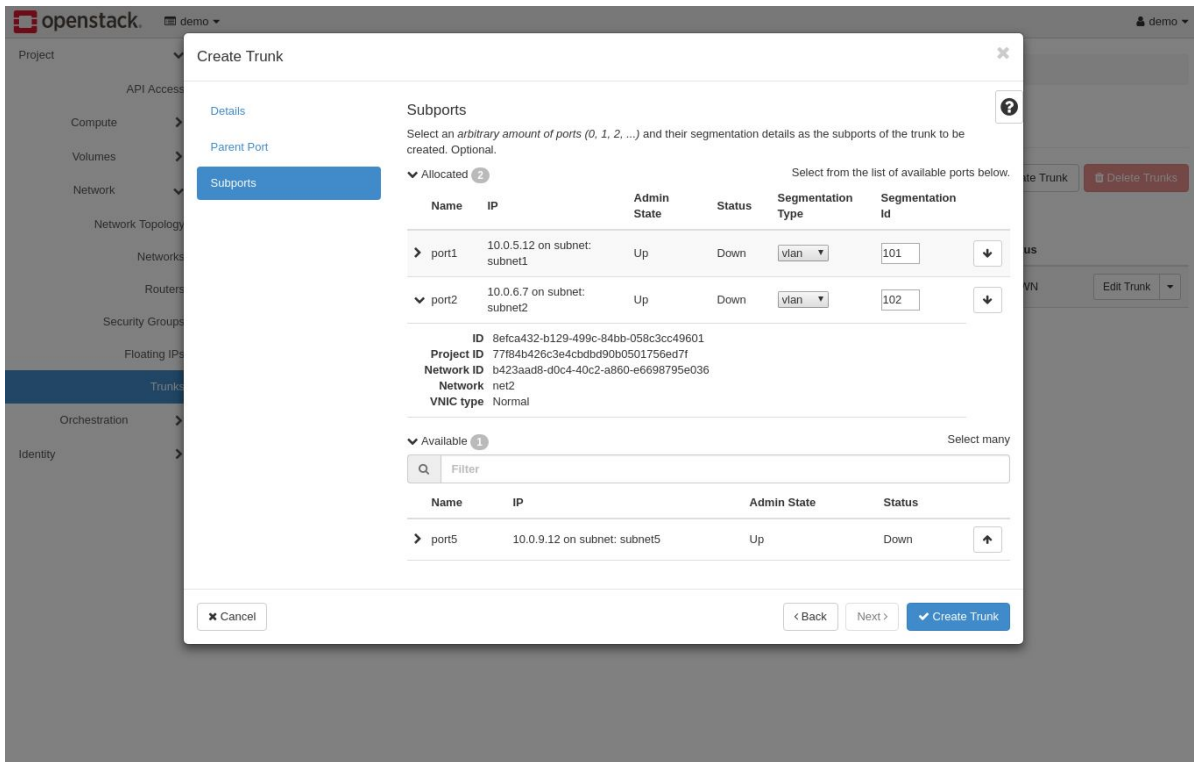
Q&A

Heat templates for trunks

- Resource `OS::Neutron::Trunk` since Pike
- Template Guide:
https://docs.openstack.org/heat/latest/template_guide/openstack.html#OS::Neutron::Trunk
- Sample template:
https://github.com/openstack/heat-templates/blob/master/hot/neutron/instance_trunk_port.yaml

```
resources:
  trunk:
    type: OS::Neutron::Trunk
    properties:
      port: { get_resource: parent_port }
      sub_ports:
        - port: { get_resource: subport1 }
          segmentation_type: vlan
          segmentation_id: 101
```

Horizon support is coming



Create Trunk

Subports

Select an arbitrary amount of ports (0, 1, 2, ...) and their segmentation details as the subports of the trunk to be created. Optional.

▼ Allocated **2** Select from the list of available ports below.

Name	IP	Admin State	Status	Segmentation Type	Segmentation Id
> port1	10.0.5.12 on subnet: subnet1	Up	Down	vlan	101
▼ port2	10.0.6.7 on subnet: subnet2	Up	Down	vlan	102

ID 8efca432-b129-499c-84bb-058c3cc49601
Project ID 77f84b426c3e4cddb90b0501756ed7f
Network ID b423aad8-d0c4-40c2-a860-e6698795e036
Network net2
VNIC type Normal

▼ Available **1** Select many

Q Filter

Name	IP	Admin State	Status
> port5	10.0.9.12 on subnet: subnet5	Up	Down

Cancel < Back Next > Create Trunk

Trunks Horizon panel is under review for Queens:

bp/neutron-trunk-ui

References

- Introductory blog post by James Denton:
<http://www.jimmdenton.com/neutron-trunks>
- OpenStack Networking Guide on trunking:
<https://docs.openstack.org/neutron/pike/admin/config-trunking.html>
- OpenStack networking API reference:
<https://developer.openstack.org/api-ref/network/v2/#trunk-networking>
- OpenStack wiki page on trunking:
<https://wiki.openstack.org/wiki/Neutron/TrunkPort>