Tail-f NCS OpenStack Networking Plugin

Scope:

This blueprint covers creating a Tail-f NCS (Network Control System) plugin for OpenStack Networking. Tail-f NCS provides the ability to provision an entire multi-vendor network in a transactional manner using diverse mechanisms such as OpenFlow, NETCONF, SNMP, and CLI. The plugin permits OpenStack Networking to use Tail-f NCS to automatically provision a multi-vendor network in response to configuration changes.

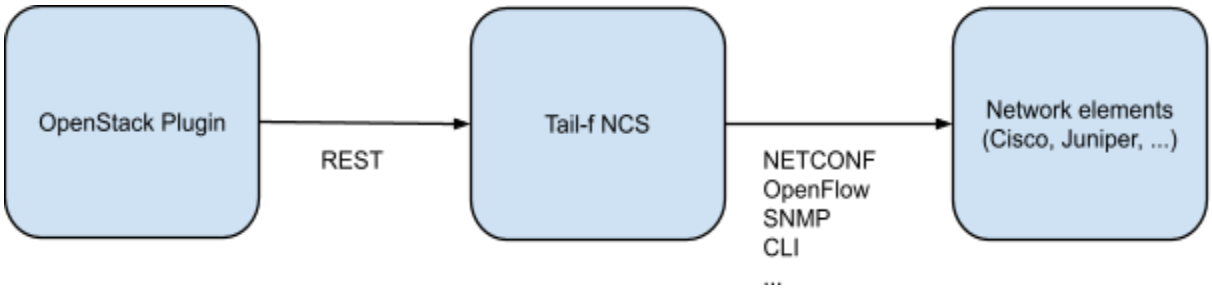
http://www.tail-f.com/network-control-system/

Use Cases:

1. Create network
2. Delete network
3. Create Port
4. Delete Port
5. L3 services (routing, load balancers)
6. Virtual machine live migration
7. QoS

Implementation Overview:

Here is the logical view of the proposed plugin:



1. NCS contains a complete YANG service model of the OpenStack Networking topology.
2. OpenStack Networking uses REST to update the model inside NCS.
3. NCS uses the model to derive all necessary provisioning actions for the network.
4. NCS performs the provisioning actions using a variety of vendor-specific protocols.

The REST interface is generic and will ideally be reused from the BigSwitch plugin with as much code sharing as is practical.

Data Model Changes:

N/A

Configuration variables:

- REST endpoint for the NCS controller.
- Username and password to authenticate with the NCS controller.

API's:

N/A

Plugin Interface:

There are no core API changes envisioned with this plugin. All existing core APIs will be handled by this plugin.

Required Plugin support:

N/A

Dependencies:

The ML2 plugin MechanismDriver is the framework we intend to use for this plugin.

CLI Requirements:

Nothing outside the existing CLI commands is envisioned here.

Horizon Requirements:

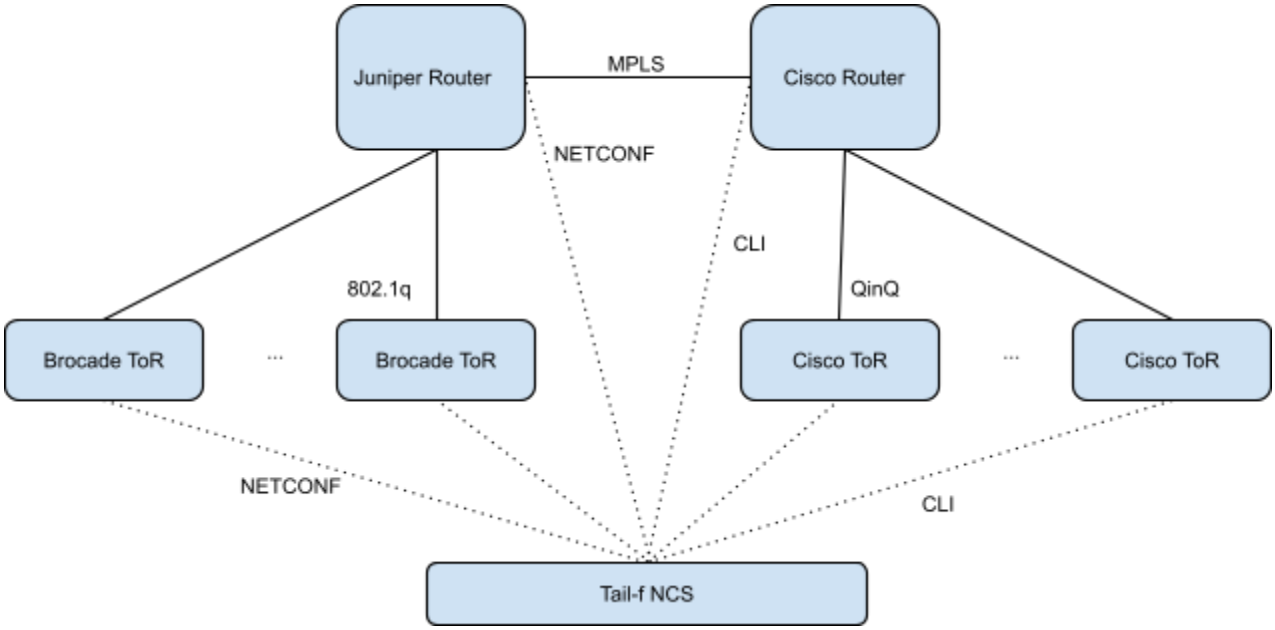
N/A

Usage Example:

OpenStack deployment in which:

1. OpenStack Networking uses LinuxBridge with VLANs for tenant networks.
2. Top-of-rack switches are provisioned with VLANs for tenant networks.
3. Top-of-rack switches map tenant networks onto 802.1q or QinQ towards the routers.
4. Routers between data centers are provisioned with MPLS tunnels for tenant networks.

In this example the ML2 plugin takes care of all networking within the OpenStack nodes and Tail-f NCS takes care of automatically provisioning the switches and routers.



Test Cases:

CRUD and REST unit test cases will be implemented as part of this OpenStack Networking Plugin.