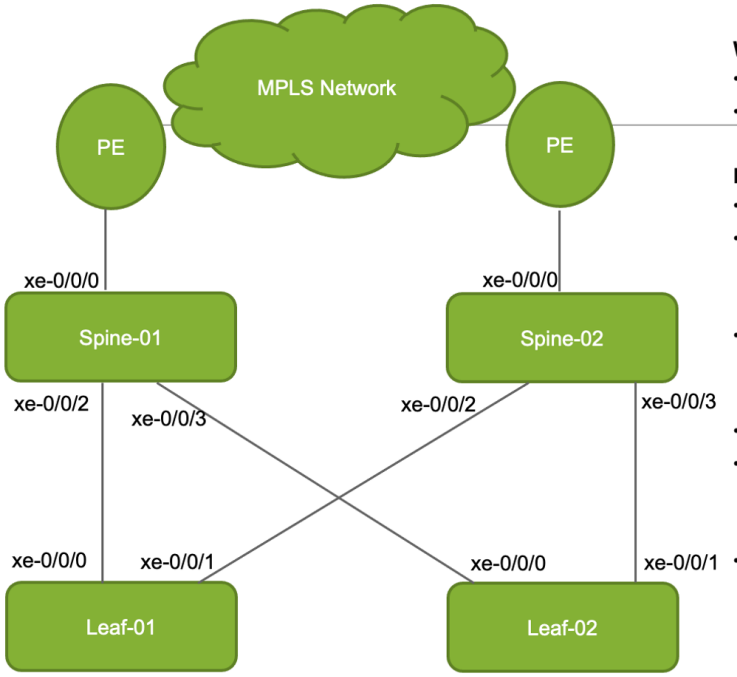
ansible-junos-evpn-vxlan

- Group of Ansible playbooks to generate IP Fabric + EVPN configuration.
- For IP Fabric Deployment.



Workflows in IT Data Centers are straightforward, for example :-

- ***All network segments can be deployed in ERB mode.***
- ***Integration with the services layer via the border leaf.***

NFVI Data Centers have complex work flows

- ***Openstack API networks should preferably be deployed in ERB mode.***
- ***An API network may be required only in pure l2 or l2+ l3 mode (for example, Canonical OSP does not require an l3 gateway for the storage network but require l3 mode for tenant /vRouter transport network.***
- ***An API network might have requirements for its l3 gateway to be configured in the master routing table in ERB and then advertisement of /32 routes toward spine layers (e.g., tenants/vRouter transport network)***
- ***An API network might need an EVPN type 5 VRF in ERB Mode.***
- ***SRIOV workflows require l3 interfaces to be configured inside an EVPN type 5 VRF on the spine layer/ DC-Gateway for further handover over to the northbound routers.***
- ***Furthermore, Contrail/Openstack virtual networks need to be extended to Spines/SDN-Gateway inside a VRF and then further handover to northbound routers.***

- In addition to IP Fabric if Contrail-Networking is deployed as SDN Controller along with Open stack, then Spine Devices will have MP-IBGP for control plane connections with Contrail Contollers
- Contrail vRouters will have MPLSoUDP tunnels with Spine devices / DC gateways for forwarding plane

If Fabric is hosting Contrail SDN Controller and Openstack Deployment

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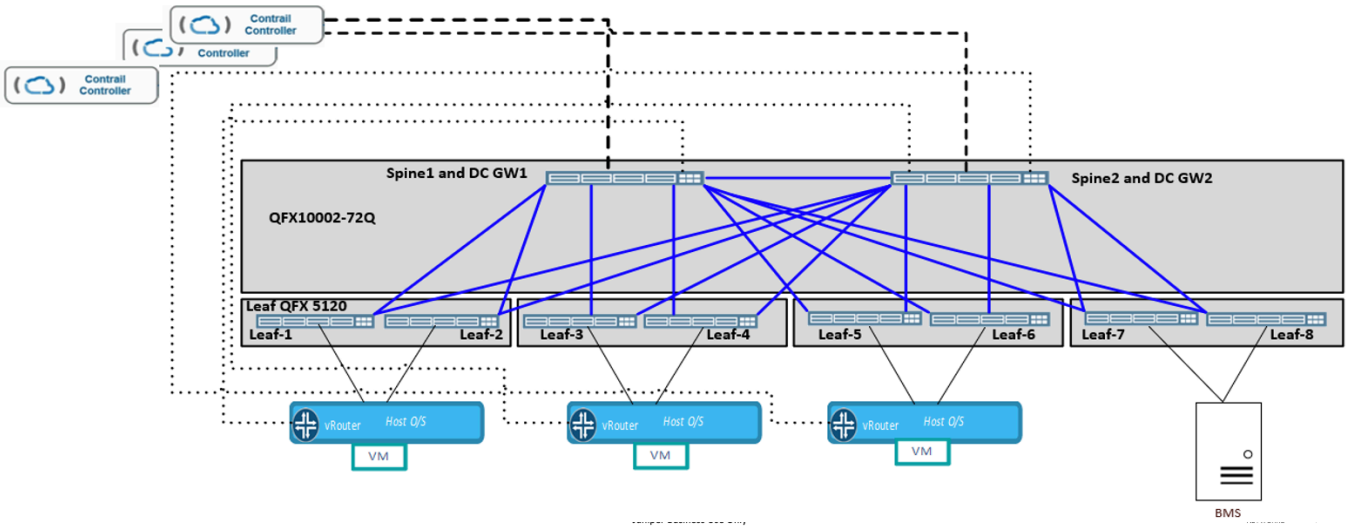
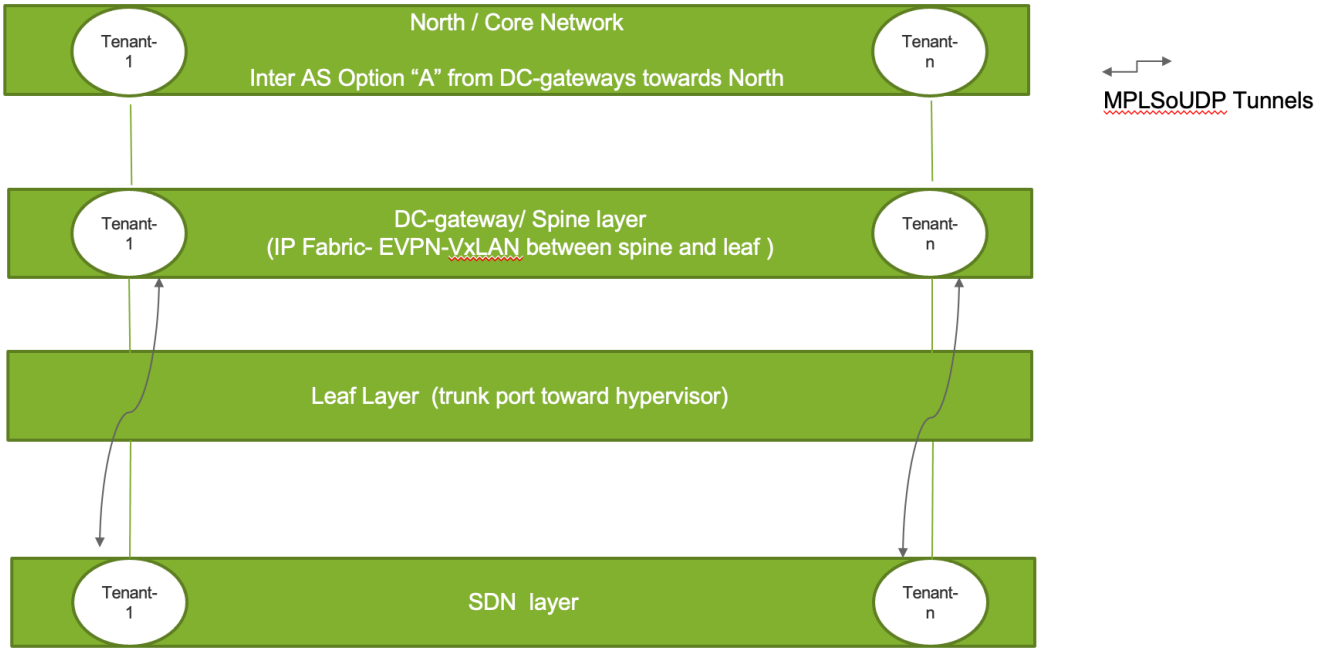
- **Each Contrail Controller (left top corner of below diagram) will establish MP-iBGP session with both DC-gateways (i.e QFX10002-72Q) for extension of Overlay Virtual Networks (VN) to the DC-gateways.**
- **Each Canonical Contrail vRouter (shown on bottom of below diagram) will establish MPLSoUDP tunnels with both DC-gateways for transportation of overlay VN traffic**



- Contrail Virtual Networks can be extended to Spines/ DC-Gateways and then further hand over to PE Routers via Inter AS Option A



Package Dependencies

python: Python 2.7.5
pip packages: ansible: 2.8.6
jinja2: 2.10.3

- Ansible user should be created and public keys should be configured on all devices
- Complete packages list is available in hostRequirements.txt

Introduction

- These ansible playbooks are designed to work in multi-site deployments.
- Site specific variables should reside in `inventory/{{site}}/group_vars/all/`
- All hosts to be configured should be specified in `inventory/{{site}}/hosts.yml`
- Generated configuration for each device will be output to `host_vars/{{site}}/{{inventory_hostname}}`

`host_vars/{{site}}/{{inventory_hostname}}/bakup/` directory will contain all historical config generated by generate_ip_fabric.yml in previous runs.

ansible.cfg has the required master ansible configuration.

- If you are running from within a python virtual environment you will need to add

```
interpreter_python="/path/to/virtual_environment/bin/python"
```

to **ansible.cfg**

Playbook execution

- The playbooks are structured into roles.
- These roles can be executed individually to generate specific configuration segments.
- Alternatively the roles can be executed in a coordinated manner to generate entire configurations.

Generating the complete configuration:

i.e. executing all the roles

```
ansible-playbook -i inventory/lab/hosts.yml -e "site=lab" generate_ip_fabric.yml #here lab is dummy site so please use your site cod
```

Generating specific configuration:

i.e. executing a specific role

Parameters to be passed: -->rolename (name of role to be executed)

```
ansible-playbook generate_ip_fabric.yml -e "rolename=generate-overlay-vars" -i inventory/lab/hosts.yml -e "site=lab"  #here lab is d
```

OR

```
ansible-playbook generate_ip_fabric.yml --extra-vars "rolename=generate-overlay-vars" -i inventory/lab/hosts.yml -e "site=lab" #here
```

- In the above example rolename is generate-overlay-vars

List of roles all individual roles:

- generate-p2p-ips
- generate-underlay-vars
- generate-underlay-ebgp
- generate-overlay-vars
- generate-overlay-ibgp
- generate-tenant-vars
- generate-tenant-config
- generate-evpn-access
- generate-assembled-configuration

Pushing the configuration

- Once the configuration has been generated, it needs to be pushed to the network.
- Pushing the generated configuration to all the hosts:

```
ansible-playbook final_config_push.yml -vvv -i inventory/lab/hosts.yml -e "site=lab" , # here lab is dummy site so please use your s
```

- Pushing the generated configuration to a particular host device:

```
ansible-playbook final_config_push.yml -vvv --limit leaf-01 -i inventory/lab/hosts.yml -e "site=lab" , #here lab is dummy site so pl
```

Dry run

It is possible to run `final_config_push` as a dry run to see what changes will be pushed without commiting the changes. This pushes the configuration, performs a `show| compare` then performs a `rollback` and exists from the device.

```
ansible-playbook final_config_push.yml -vvv --check --diff -i inventory/lab/hosts.yml -e "site=lab" , # here lab is dummy site so pl
```

Commit Confirm

- Push with commit-confirm and commit-minutes for all hosts -- If the configuration is not pushed within the commit minutes time the configuration will be roled back.
- Parameters to be passed: ->commit_confirm (yes or no) ->commit_minutes Ex(1,2)

```
ansible-playbook commit_confirm_push.yml -e "commit_confirm=yes commit_minutes=1" -i inventory/lab/hosts.yml -e "site=lab" , #here l
```

- Push with commit-confirm and commit-minutes for a particular host:

```
ansible-playbook commit_confirm_push.yml -e "commit_confirm=yes commit_minutes=1" --limit leaf-01 -i inventory/lab/hosts.yml -e "sit
```

Fabric verfication

- This package also contains a playbook to run many verification tests on the fabric to ensure it is operational after configuration has been pushed.

```
ansible-playbook -i inventory/lab/hosts.yml -e "site=lab" check_ip_fabric.yml, #here lab is dummy site so please use your site codea
```

- or Optionally run following playbooks one by one

```
fabric_ebgp_status_check.yml
fabric_esi_lag_status_check.yml
fabric_links_status_check.yml
fabric_ibgp_status_check.yml
fabric_vtep_status_check.yml
fabric_underlay_interfaces_icmp_check.yml
```

Collect CLI output

- There is also a playbook to collect any arbitrary CLI output.
- To collect Junos CLI output execute `check_cli.yml` playbook.
- The output to gather can be customised be modifiying `inventory/{{site}}/group_vars/all/cli.yml`