

# Hybrid VNFs across OpenStack & K8S VIMs

IRC: phuoc, dkushwaha, dangtrinhnt

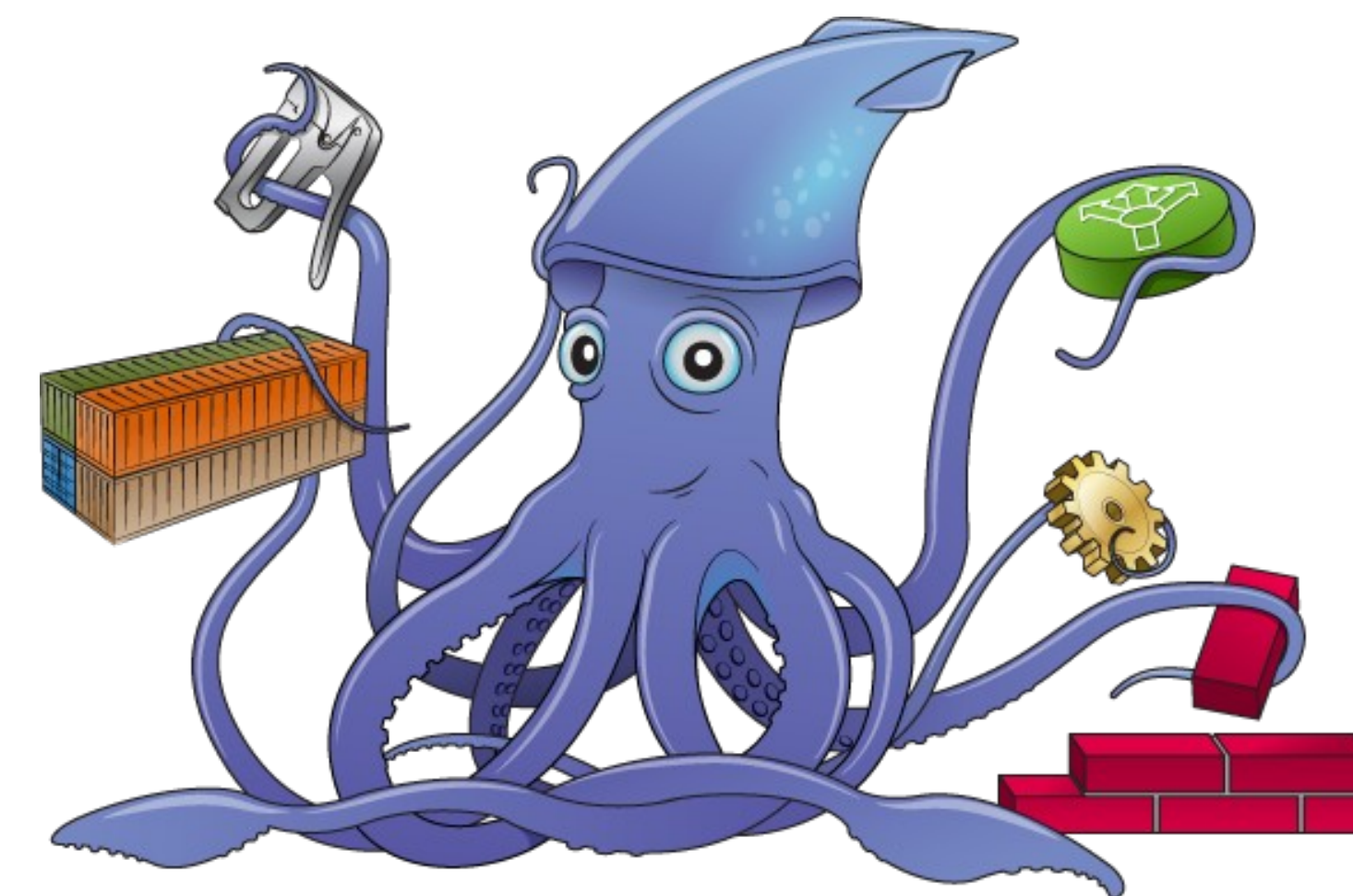
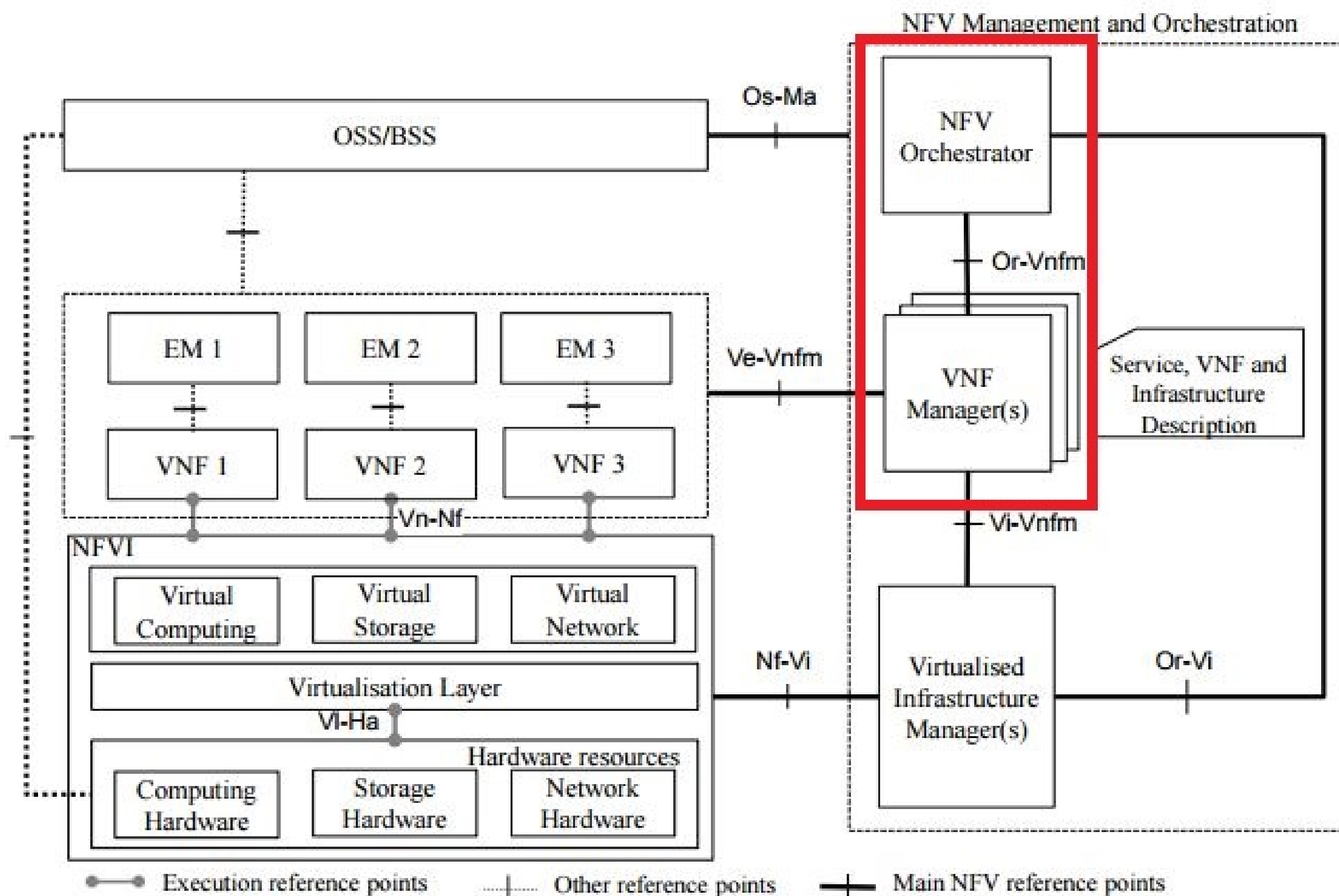
# Agenda

- Introduction
- VM-based VNFs
- Container-based VNFs
- Service Function Chaining (SFC)
- Hybrid SFC
- Configuration

# Introduction

Tacker Project

# Introduction



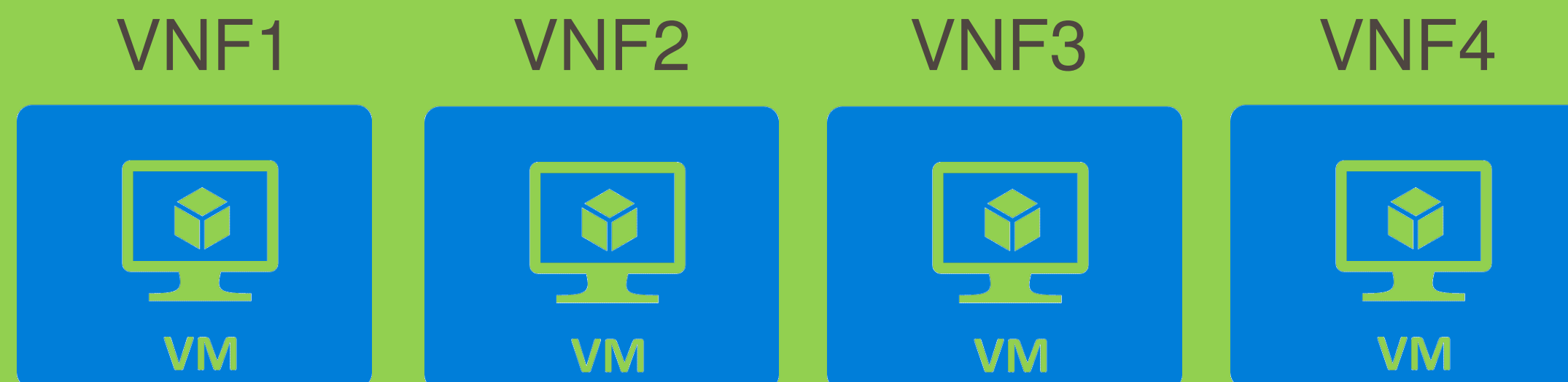
## Tacker

is an official OpenStack project for *NFV Orchestration* and *VNF Management* using standards based architectures

# VM-based VNFs

OpenStack VIM


## Virtual Network Functions



## NFV MANO

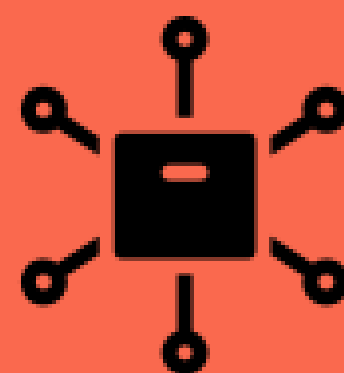
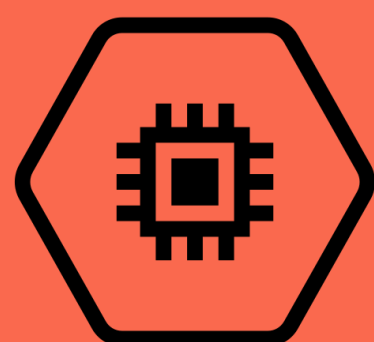
NFVO

VNFM

 VIM  
openstack™

## NFVI

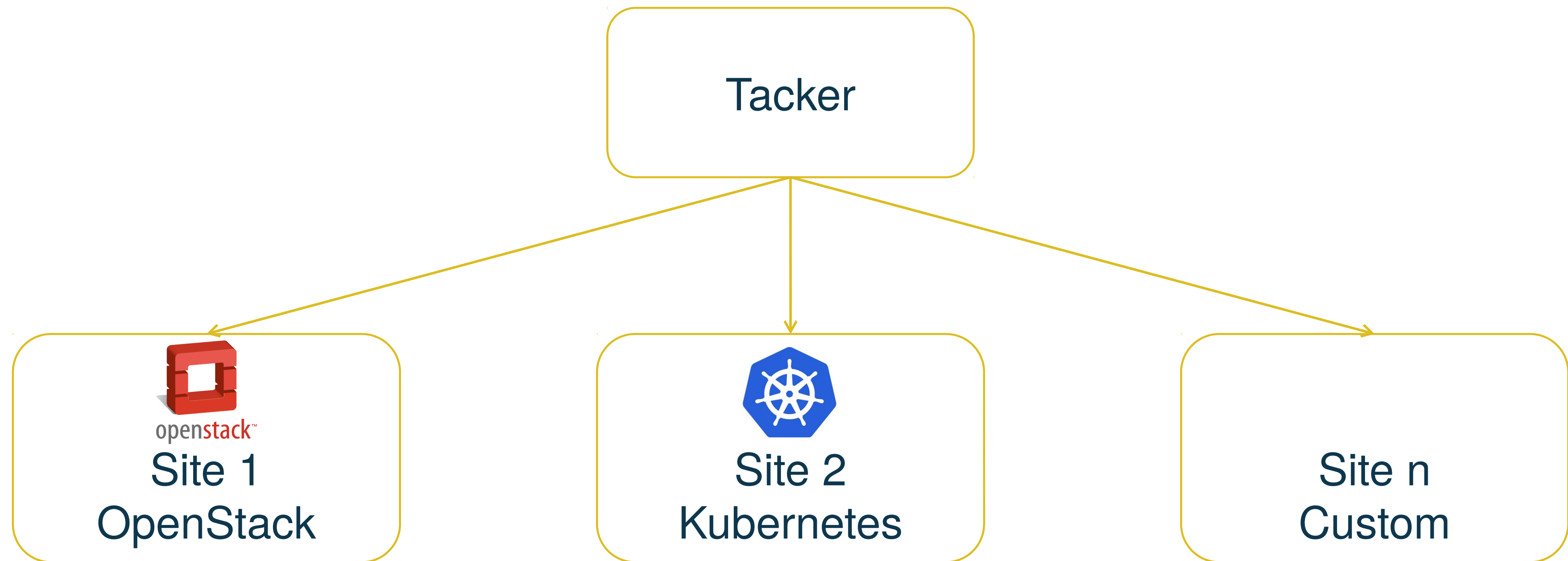
Virtualization Layer



# Container-based VNFs

Kubernetes VIM

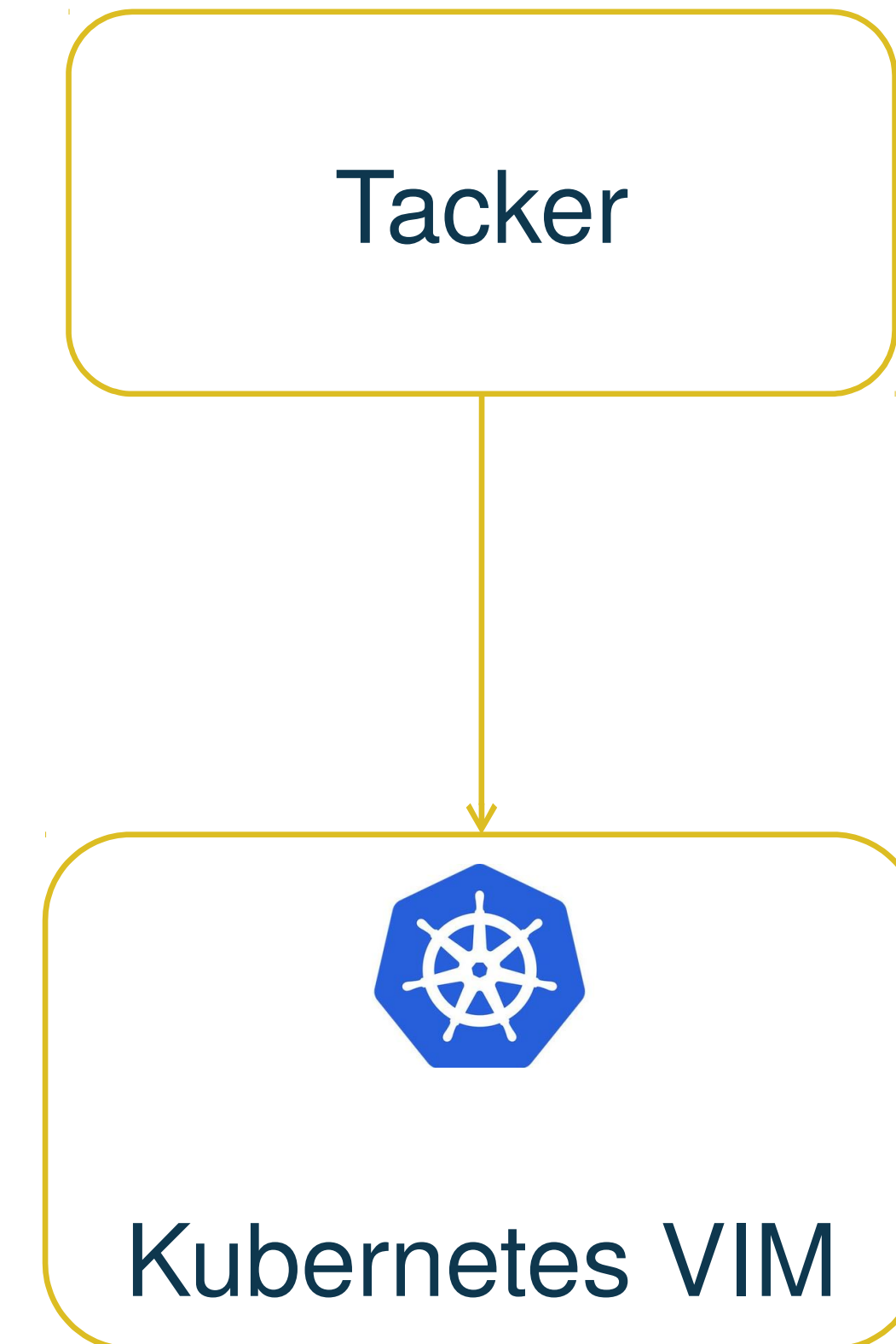
# Kubernetes VIM





# Kubernetes VIM

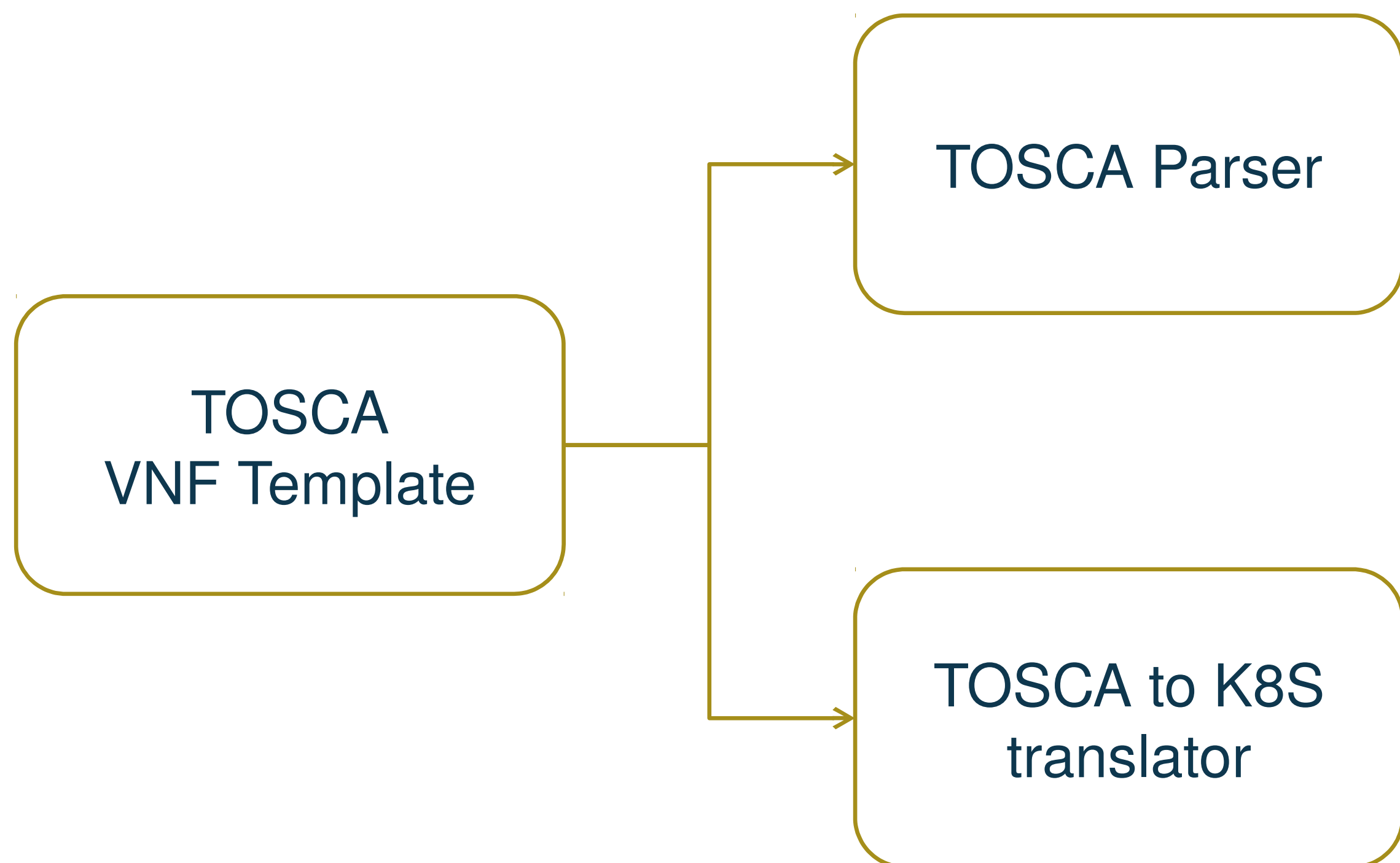
- auth\_url:  
https://192.168.11.110:6443
- username: "admin"
- password: "admin"
- ssl\_ca\_cert: None
- type: "kubernetes"



# Container based VNFs (c-VNFs)

- TOSCA VNF template for c-VNFs.
- Basic CRUD c-VNFs.
- Simple TOSCA VNF to Kubernetes translation is supported.
- Unified networking with kuryr-kubernetes.

# Container based VNFs

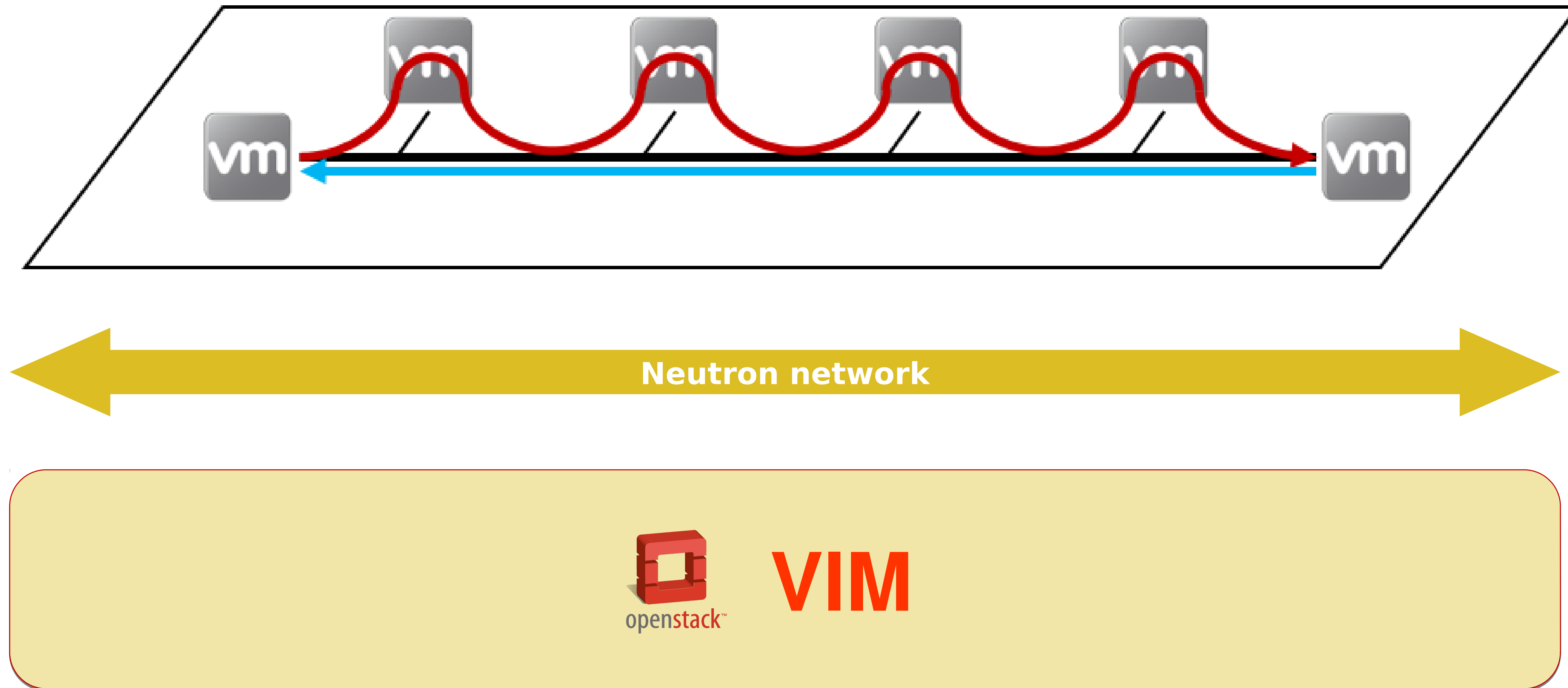


## Sample VNFD template

```
topology_template:
  node_templates:
    VDU1:
      type: toasca.nodes.nfv.VDU.Tacker
      properties:
        namespace: default
        mapping_ports:
          - "80:80"
          - "88:88"
        service_type: NodePort
      vnfcs:
        front_end:
          num_cpus: 0.5
          mem_size: 512 MB
          image: nginx
          ports:
            - "80"
```

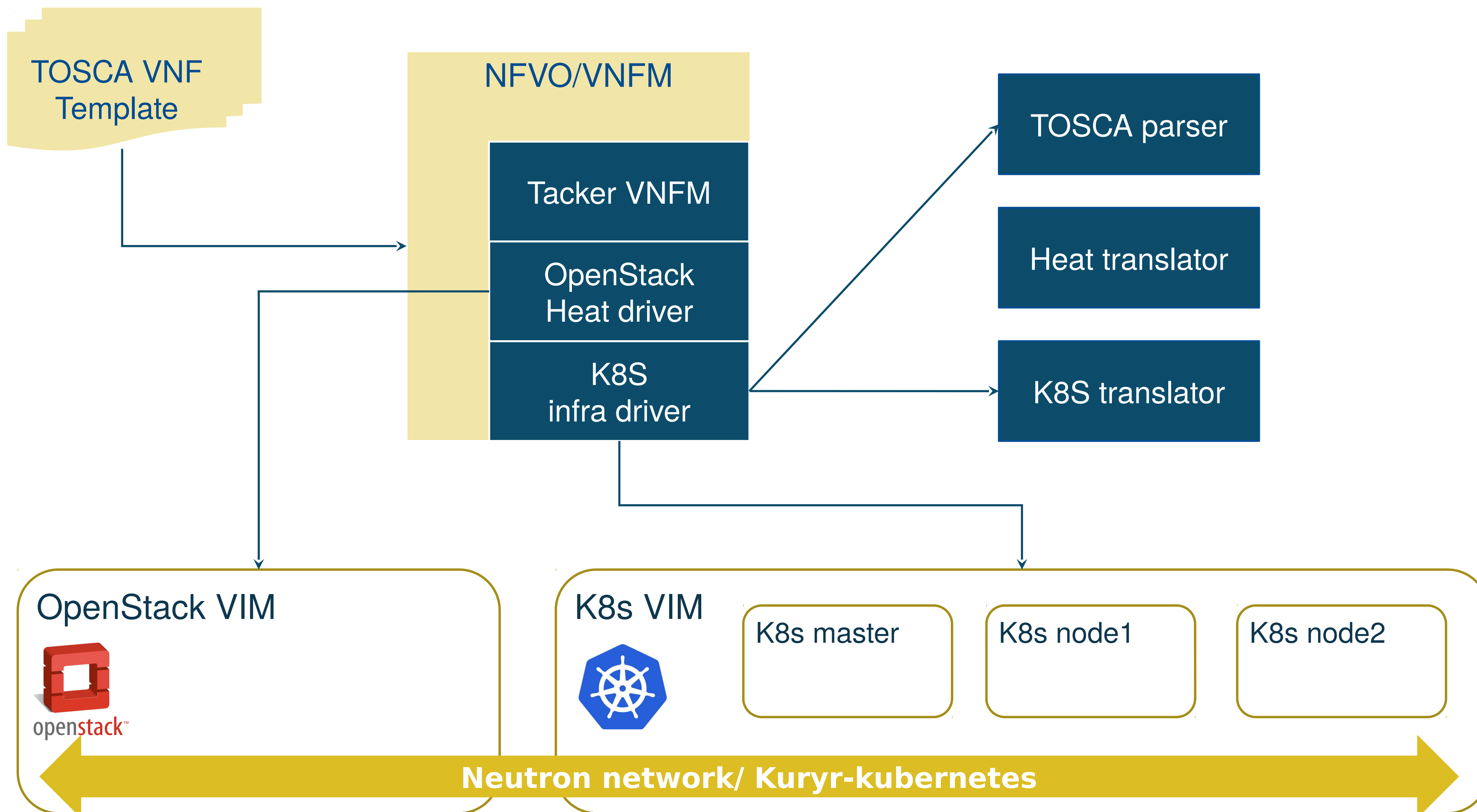
# Service Function Chaining (SFC)

Before Kubernetes VIM



# Hybrid SFCs

Across OpenStack and K8S VIMs



# Container based VNFs

HTTP  
client

HTTP  
server



# Container based VNFs

HTTP  
client

OpenStack VIM

Kubernetes VIM

HTTP  
server

NFVI

# Container based VNFs

HTTP  
client

IDS

OpenStack VIM

Firewall

Kubernetes VIM

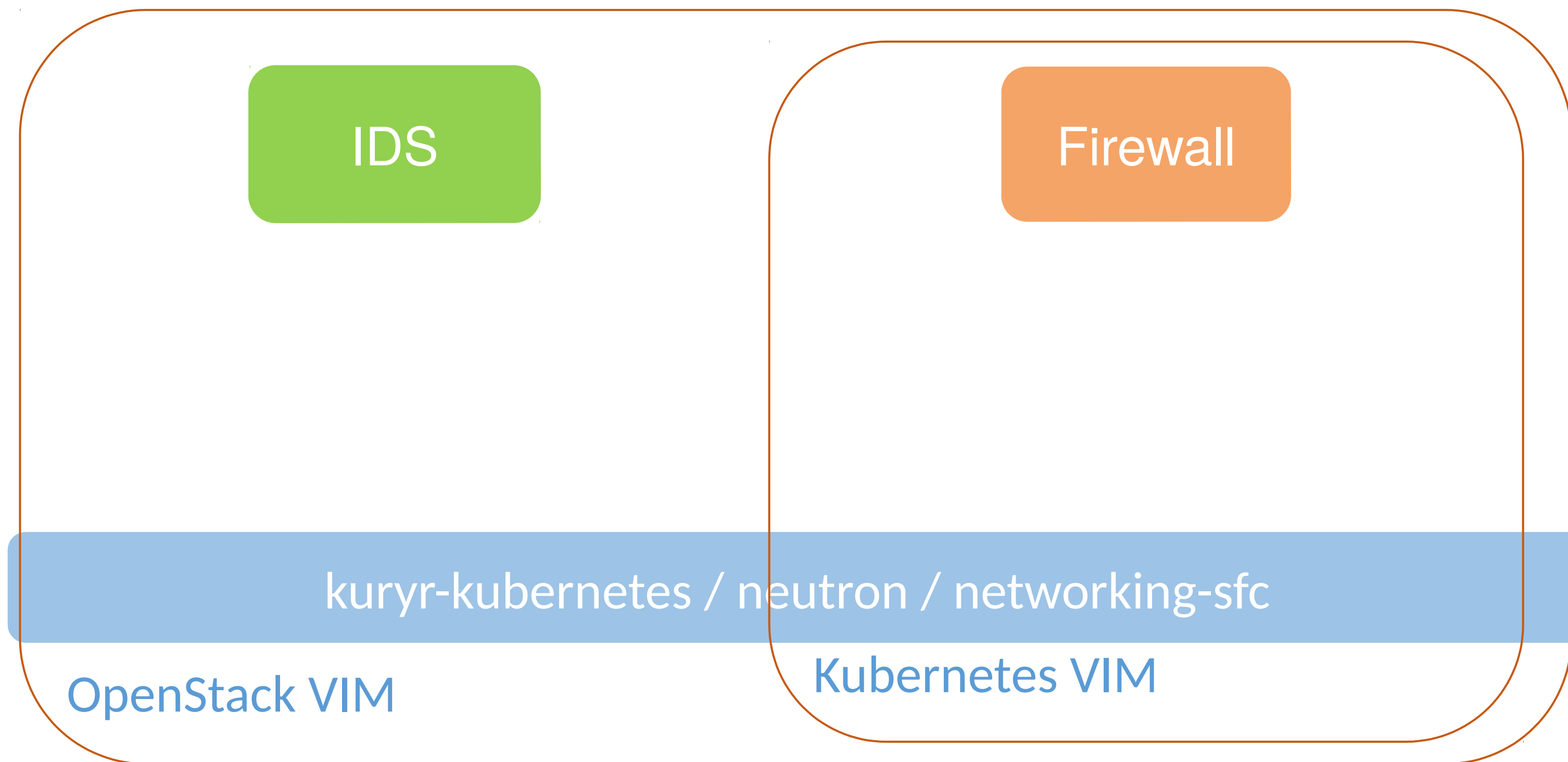
HTTP  
server

NFVI

# Container based VNFs

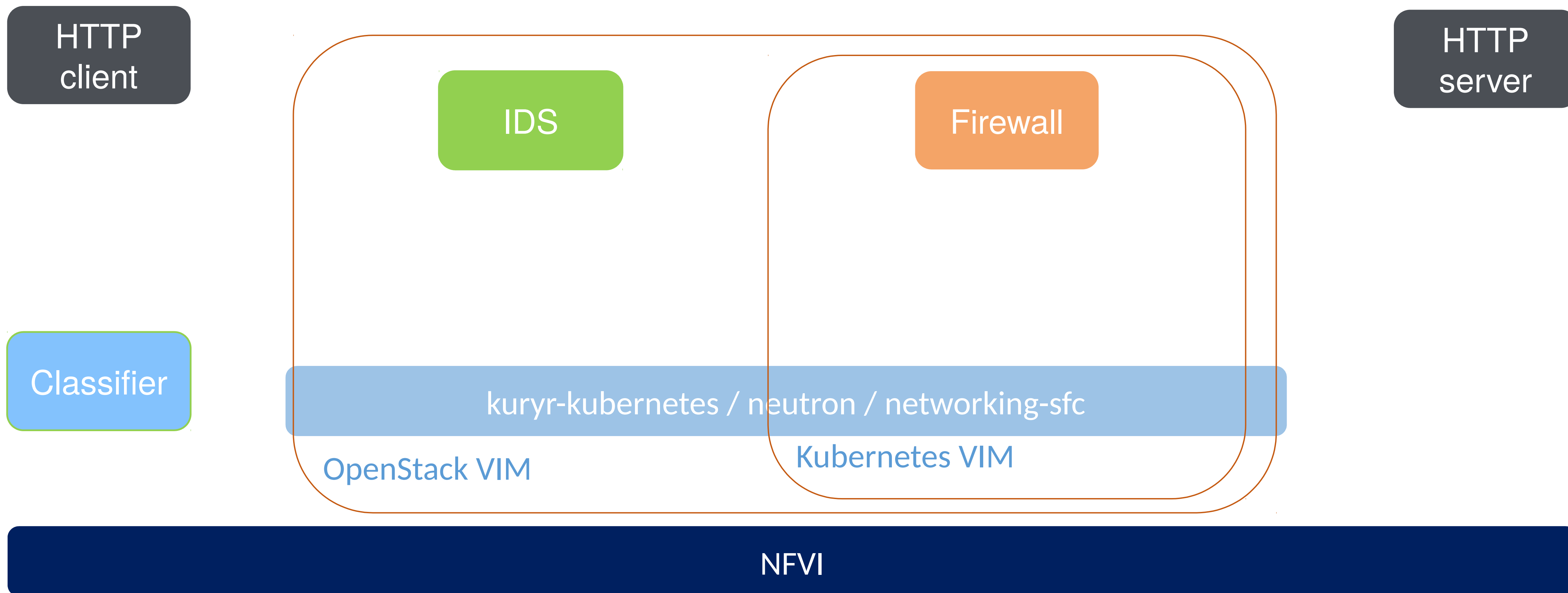
HTTP client

HTTP server

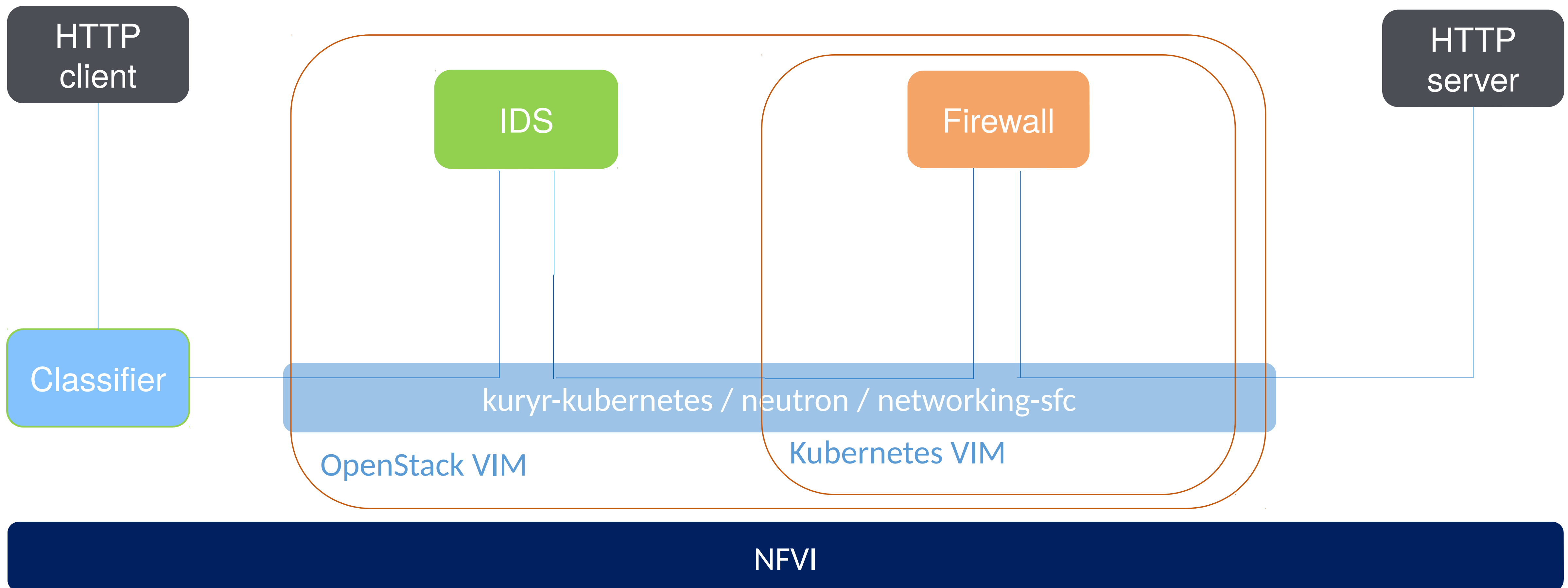


NFVI

# Container based VNFs



# Container based VNFs



# Configuration

For Hybrid SFCs

<Kubernetes vim\_config.yaml>

auth\_url: https://192.168.0.14:6443

username: admin

password: admin

project\_name: default

**openstack\_vim\_id: 507268b6-db23-45c9-a66e-5456eacbd0e1**

type: kubernetes

# DEMO



# References

- Documentations: <https://docs.openstack.org/tacker/latest/>
- Hybrid SFCs blueprint: <https://blueprints.launchpad.net/tacker/+spec/hybrid-sfc-vm-container>
- IRC: #tacker

**THANK YOU!**