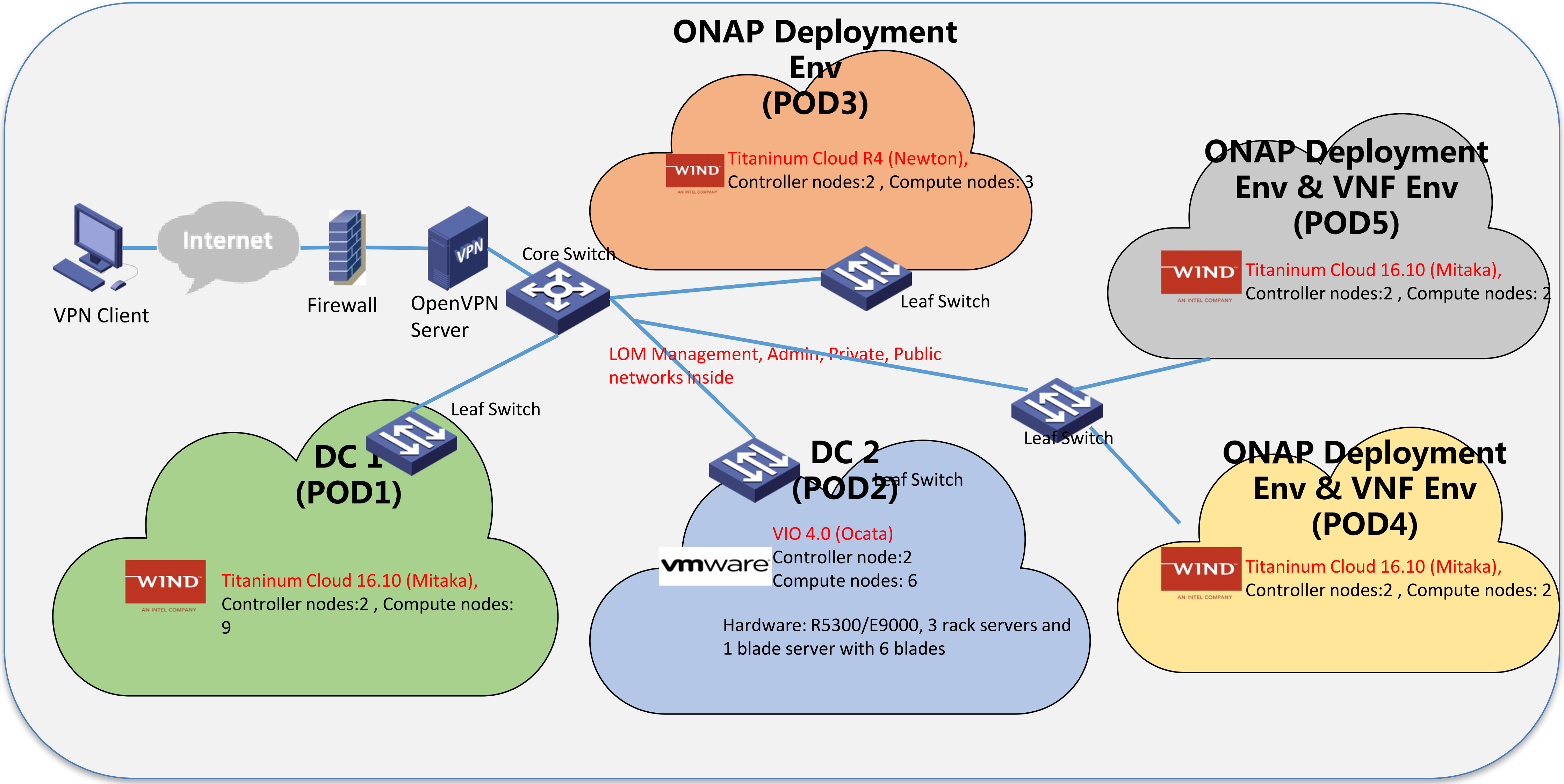
ONAP Casablanca Use Case in CMCC Lab

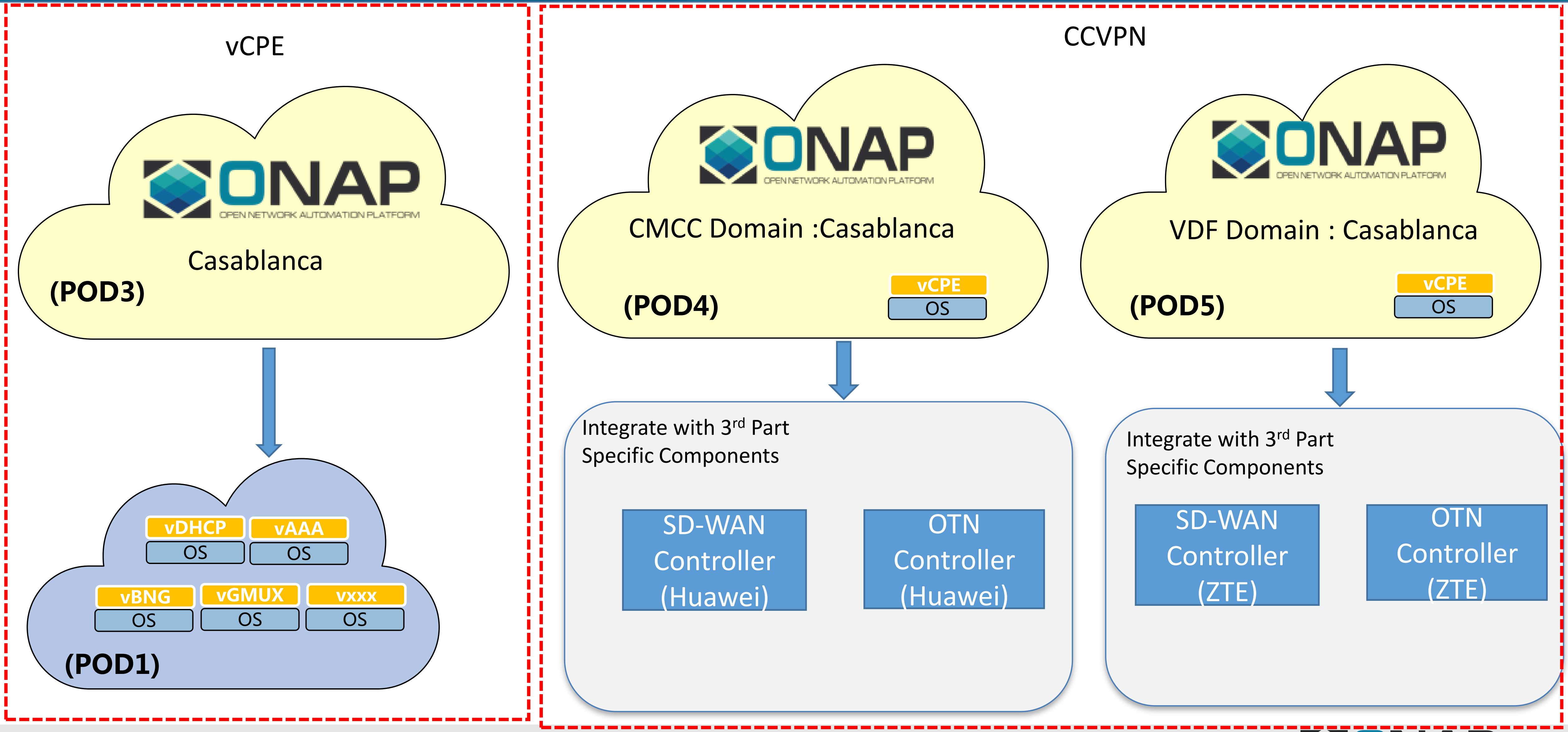
China Mobile: Yan Yang
Intel: Haibin Huang

CMCC Lab Overview

Physical Lab Overview @CMCC



Use Case Deployment @CMCC



Key Data @CMCC

CMCC Lab key data

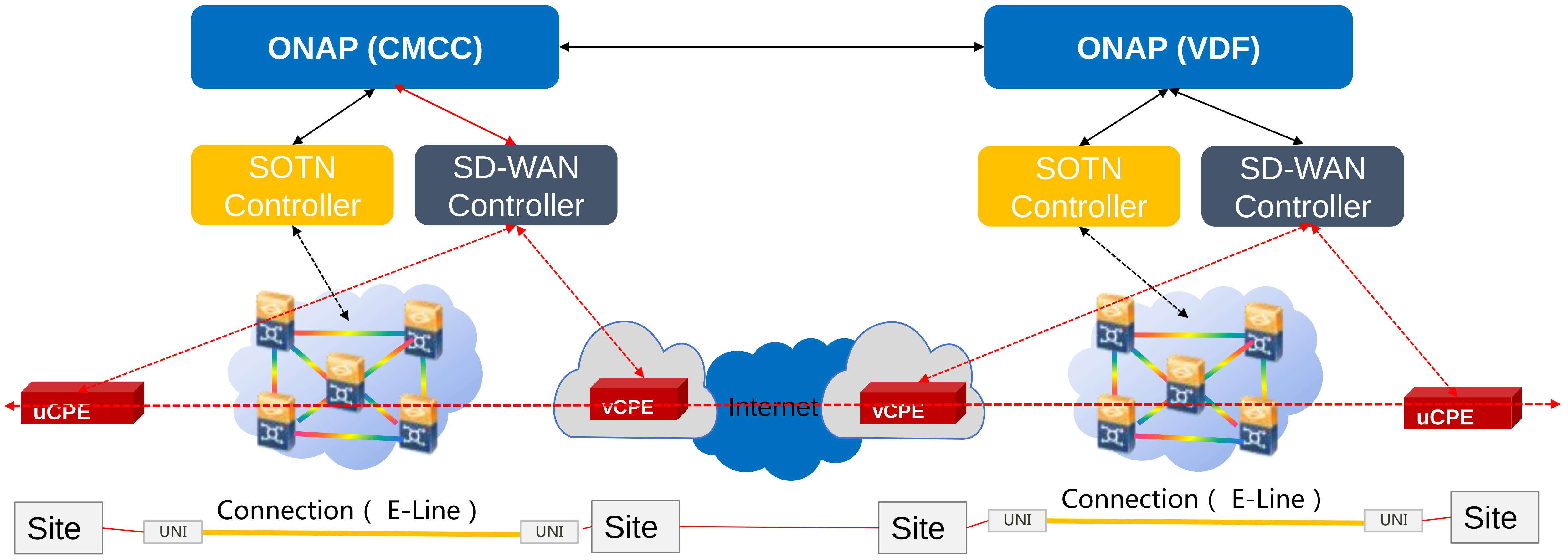
- ONAPs ：3 ONAP OPEN NETWORK AUTOMATION PLATFORM
- Cloud ：5 WIND (4) and vmware (1)
- Physical hardware ：73  
- Participating member ：8

中国移动 China Mobile, ZTE, HUAWEI, intel, NOKIA, WIND, vmware, 亿阳信通 BOCO Inter-Telecom

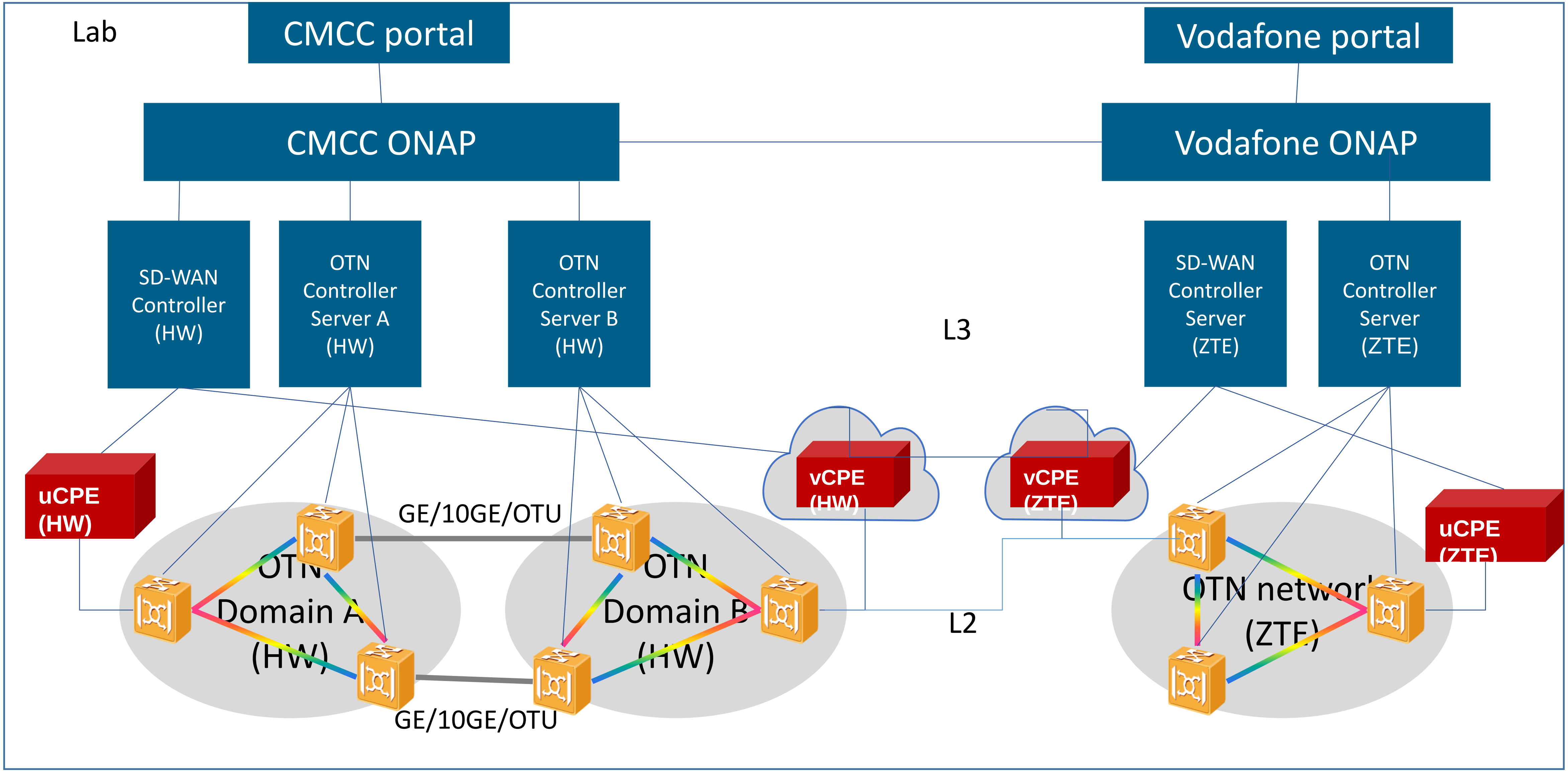
CCVNP Use Case

CCVPN Overview

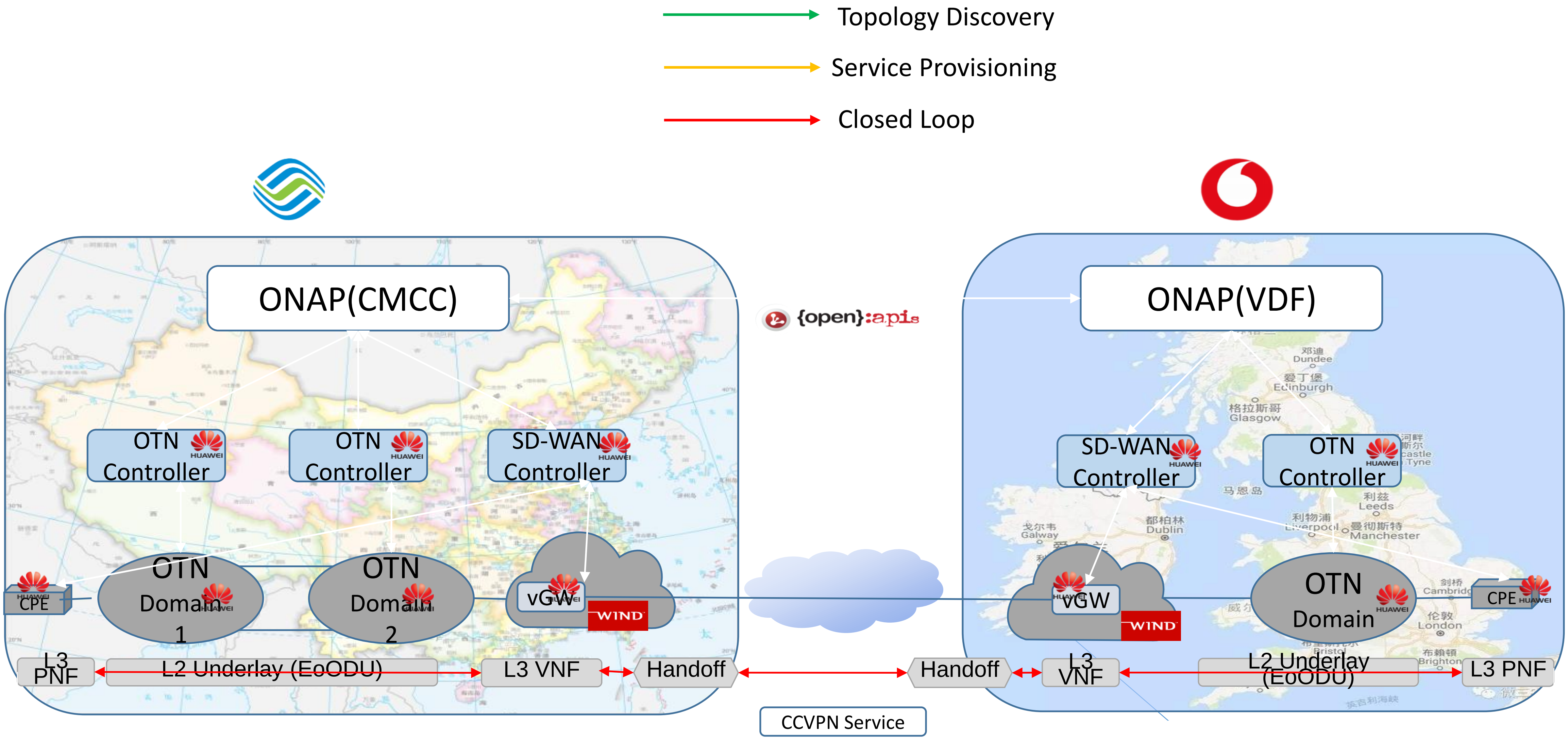
CCVPN(Cross Domain and Cross Layer VPN) **by ONAP Peering Orchestration Between SPs**



CCVPN Network Topology



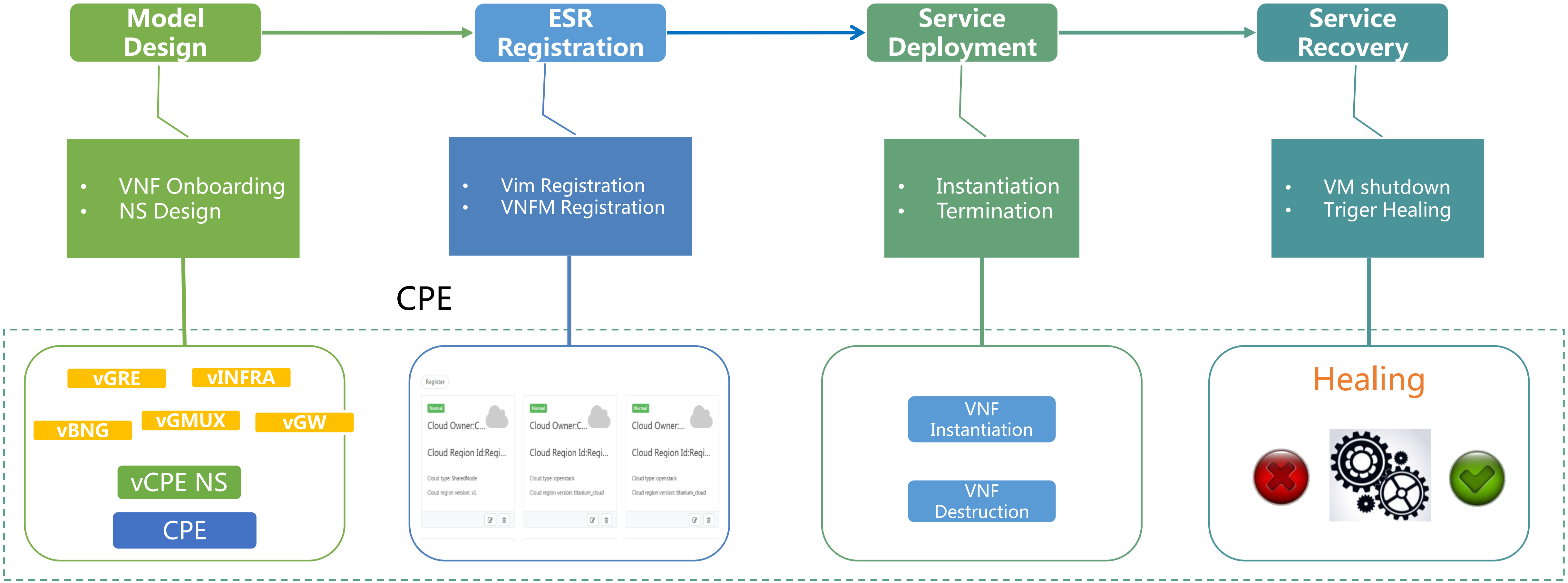
CCVPN Test Case



vCPE Use Case

vCPE Test Case

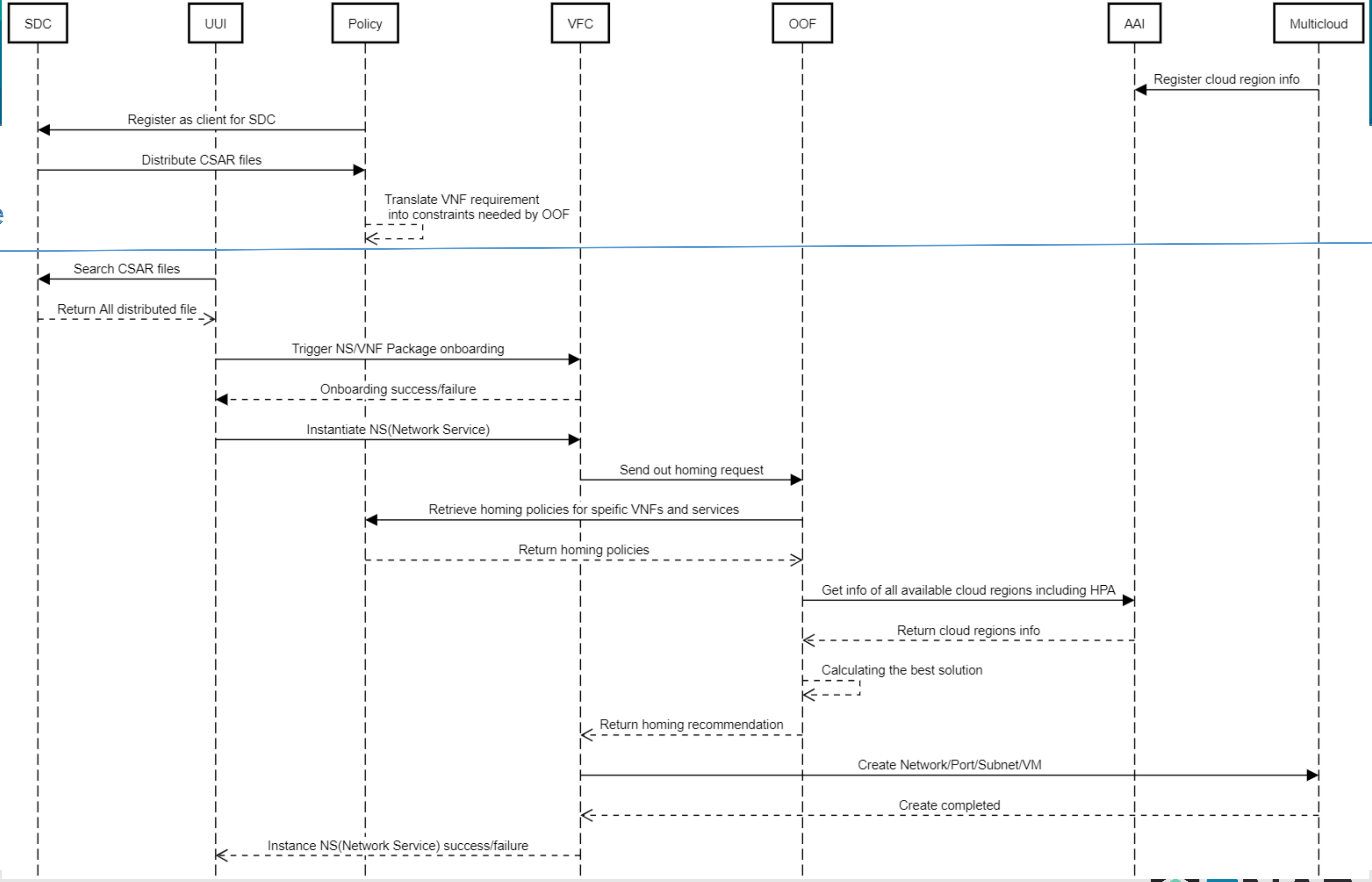
Key Test Case: ESR Registration, Model Design, Service Deployment, Service Recovery



vCPE

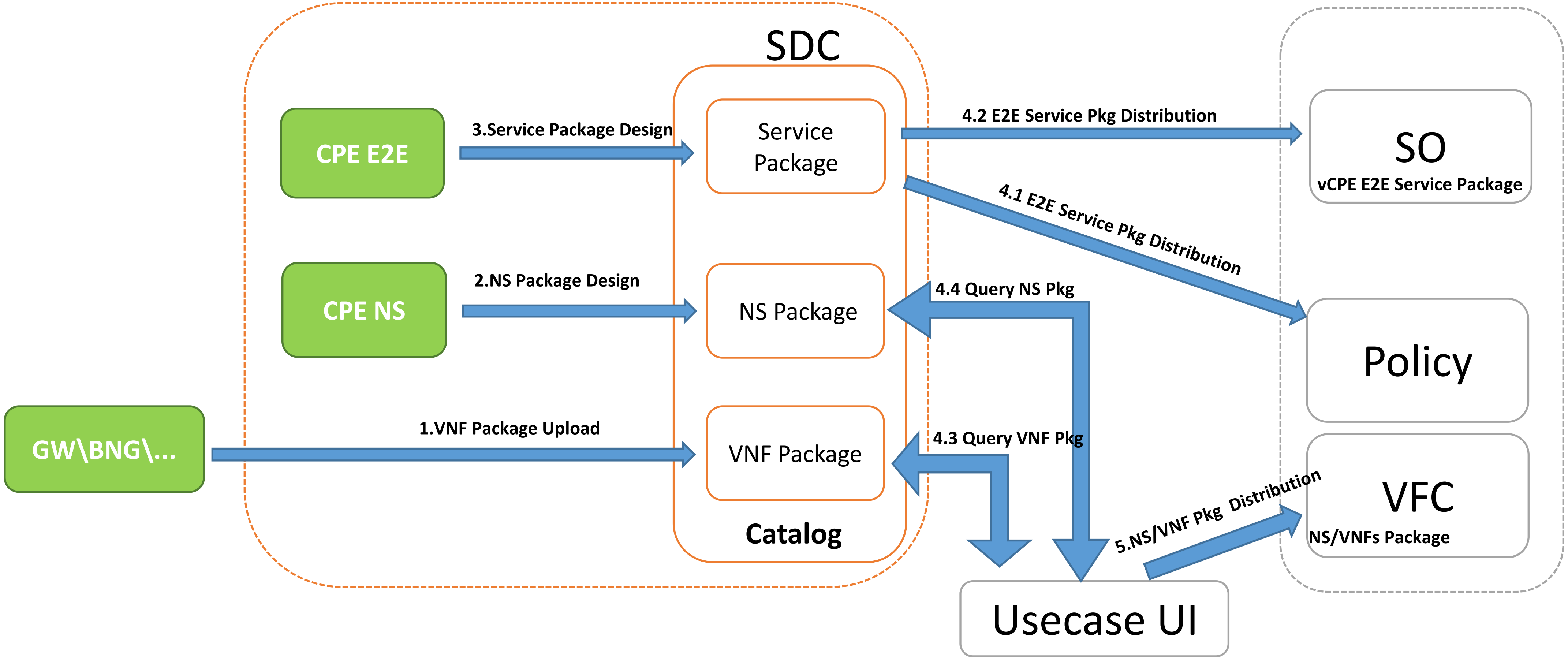
Design Time

Run Time

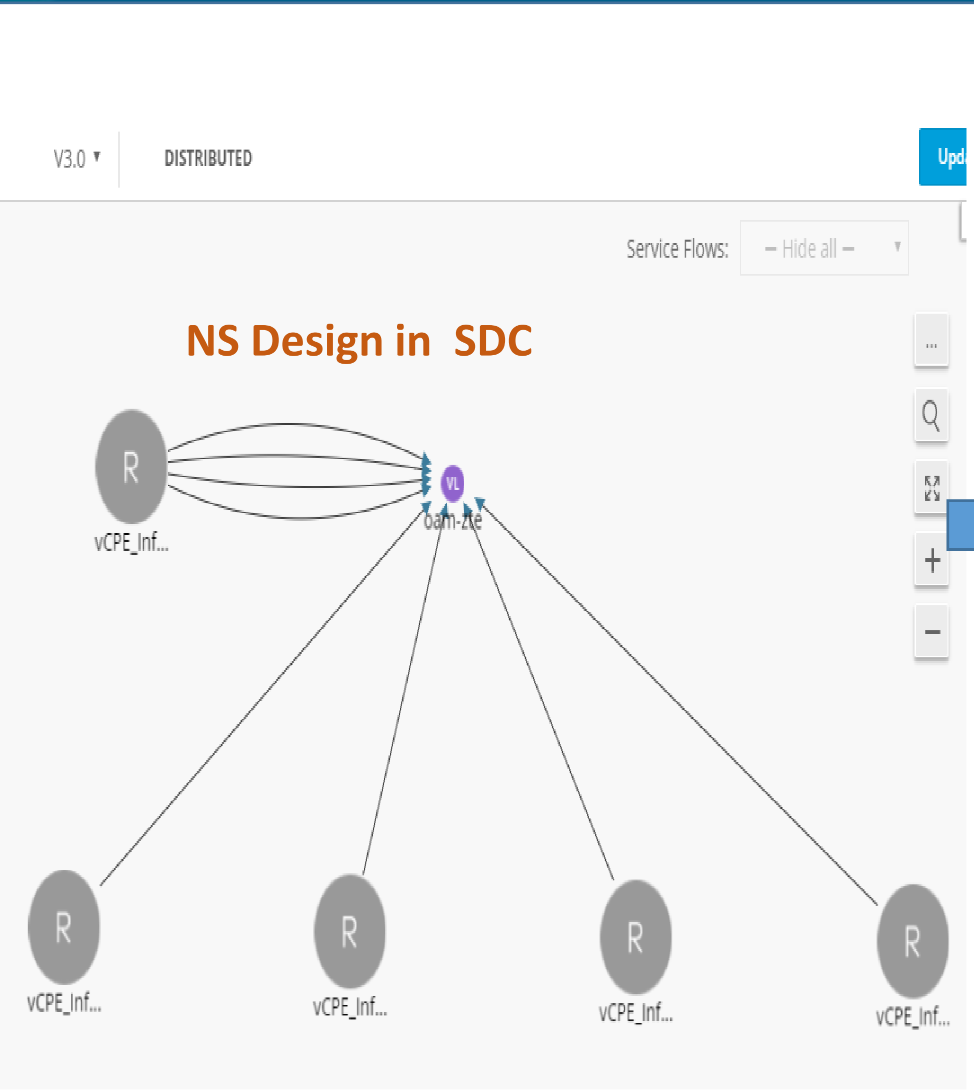


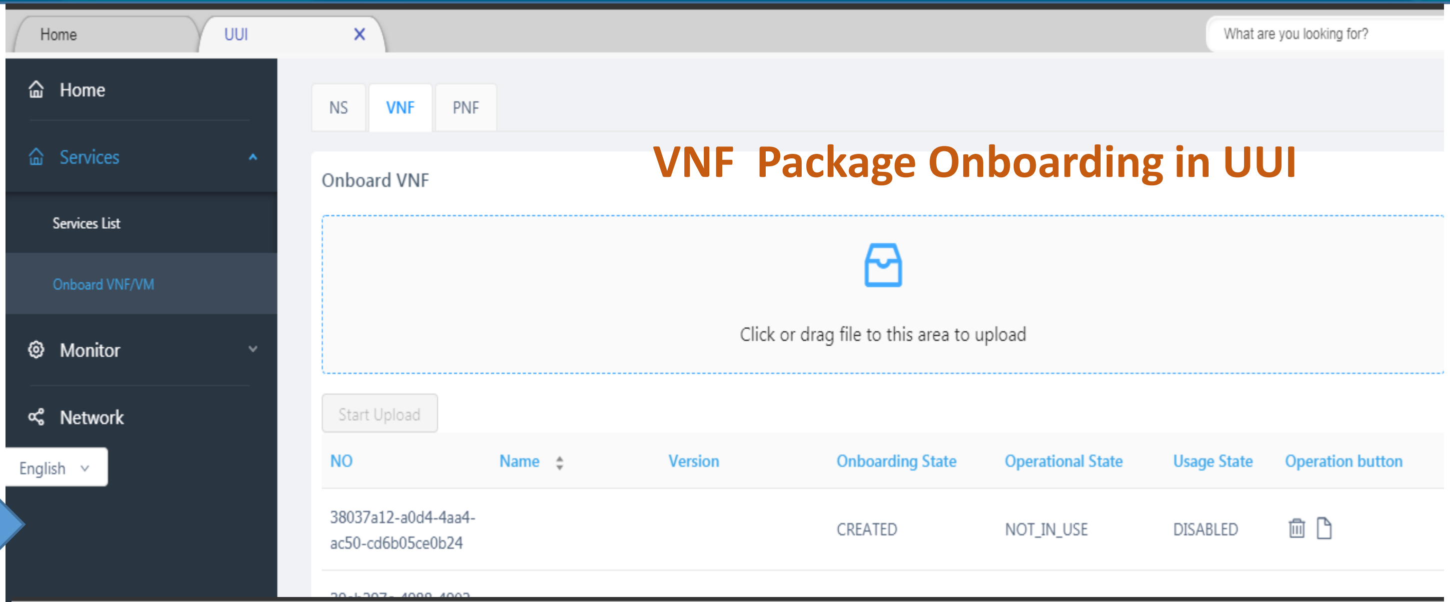
Design Time

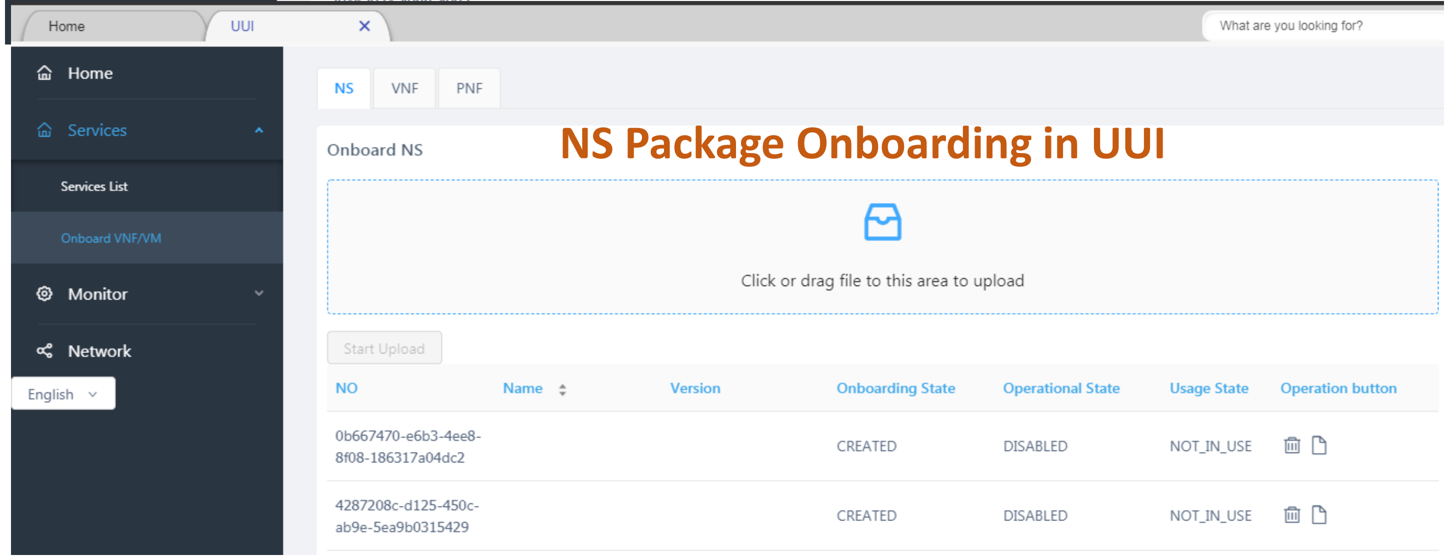
vCPE – Package Design & Distribution



vCPE – Package Design & Distribution







ESR Registration

VIM Configuration

- NIC configure

We can refer to [1] before “Launching instances with SR-IOV ports”
pci_passthrough_whitelist = { "devname": "eth3", "physical_network": "physnet2"}

- Create aggregate

$ openstack aggregate create --property sriov_nic=sriov-nic-intel-1234-5678-physnet1:1 aggr11

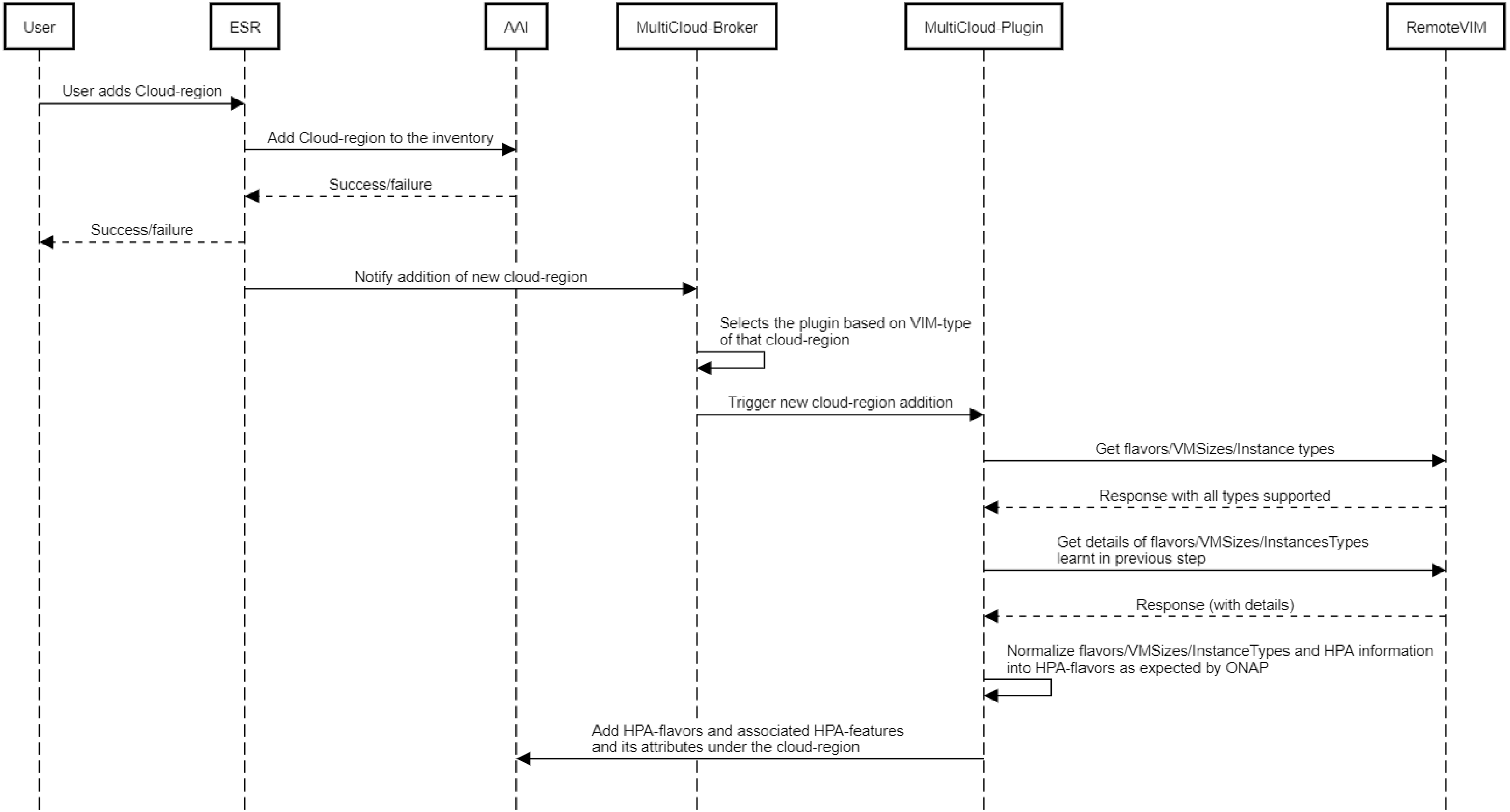
- Create flavor

$ openstack flavor create onap.flavor1 --id auto --ram 512 --disk 40 --vcpus 4

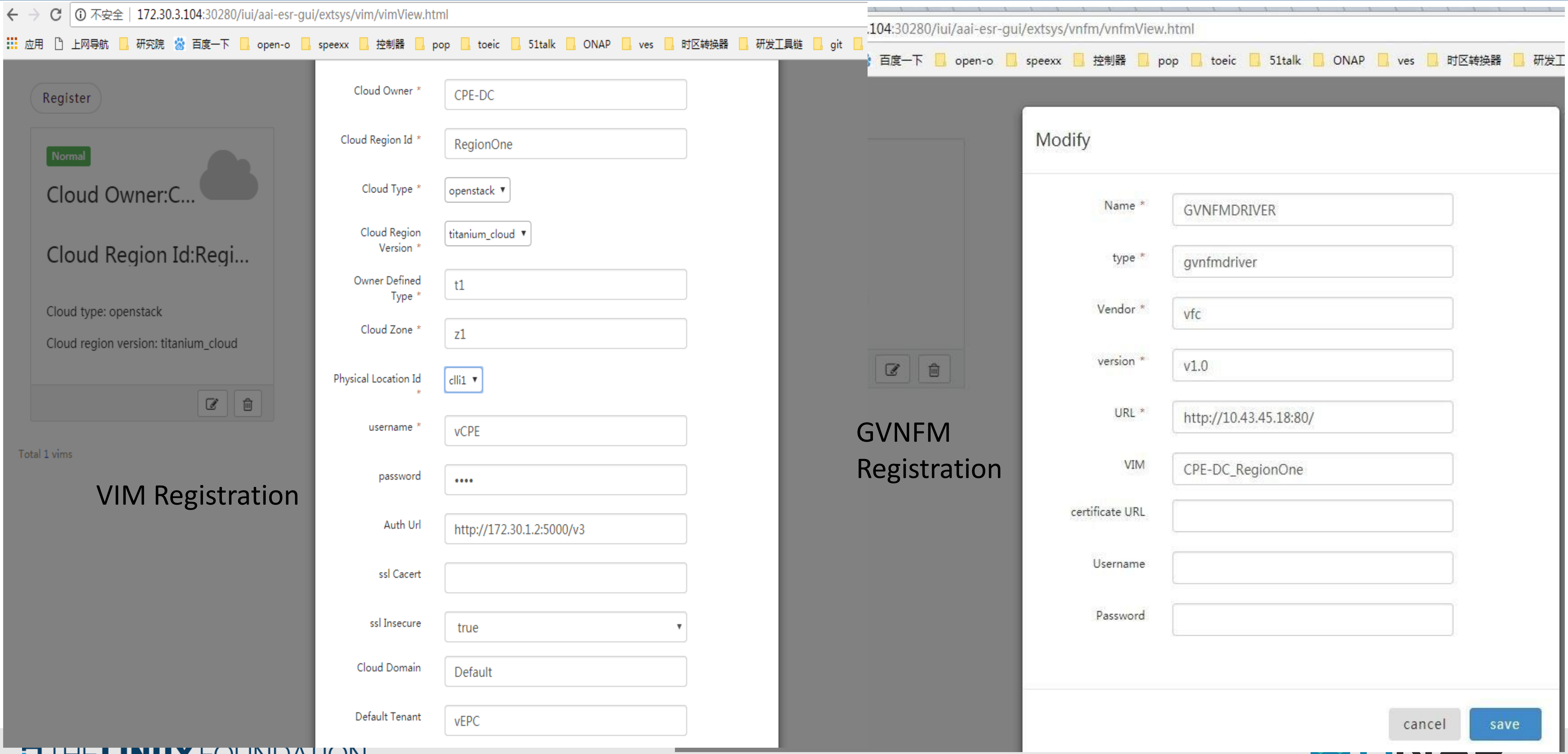
$ openstack flavor set onap.flavor1 --property sriov_nic=sriov-nic-intel-1234-5678-physnet1:1

- Create provider network

MultiCloud register and HPA discovery



VIM & GVNFM Registration via ESR GUI



AAI information

hpa-capability-id="ty53fd3d-0b15-11w4-81b2-6210efc6dff9",

hpa-feature="sriovNICNetwork",

architecture="intel64",

hpa-version="v1",

hpa-attribute-key	hpa-attribute-value
pciCount	{value: 1}
pciVendorId	{value: "1234"}
pciDeviceId	{value: "5678"}
physicalNetwork	{value:"physnet1"}

sriov_nic=sriov-nic-<vendor>-<Vendor ID>-<Device ID>-<physicalNetwork:COUNT>

It is expected thatOpenstackadministrator creates alias that stars with sriov and put the vendor ID, device ID.

Example:

Assume that there are two SRIOV-NIC cards supported by a region, Intel and Mellanox.

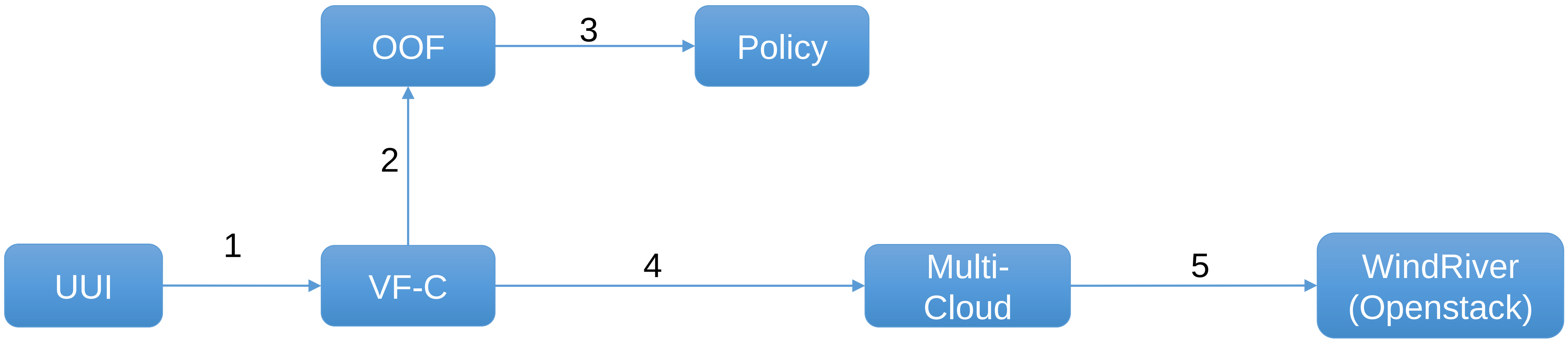
sriov-nic-intel-1234-5678-physnet1:1

sriov-nic-mellanox-2345-6543-physnet1:1

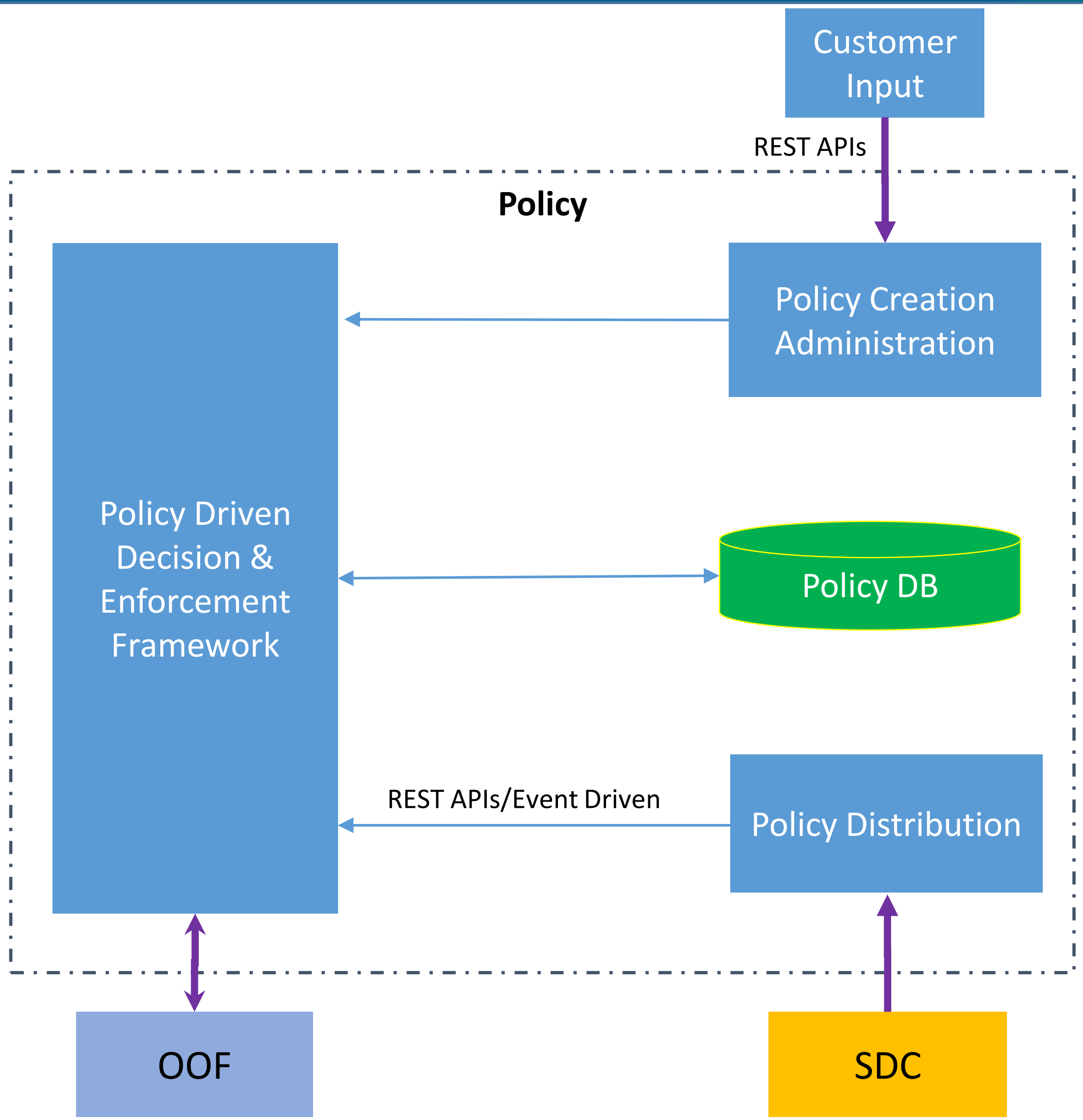
Run Time

ONAP – Run Time

Lifecycle: Instantiate/terminate/heal…



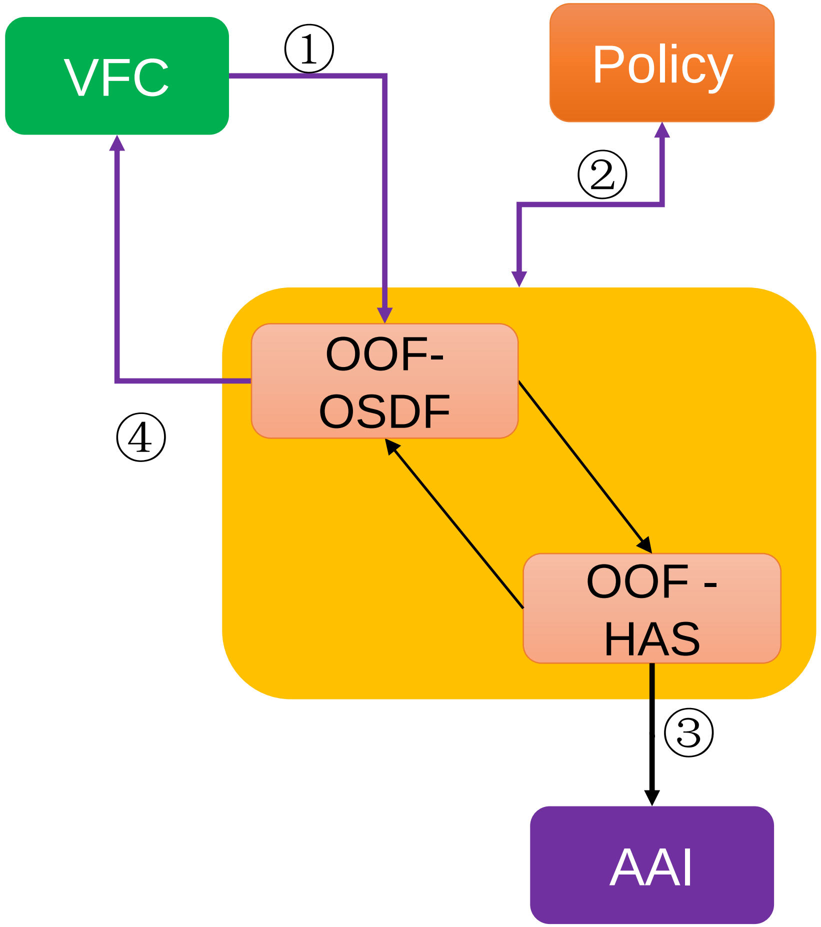
Policy




```
"flavorLabel":"vcpe.vgw",
"flavorProperties":[{
   "hpa-feature": "sriovNICNetwork",
   "mandatory": "True",
   "architecture": "generic",
   "hpa-version": "v1",
   "directives" : [
     {
       "type": "sriovNICNetwork_directives",
       "attributes": [
         {"attribute_name": "vgw_nic_type", "attribute_value": “direct"},
         {"attribute_name": "vgw_provider_network", "attribute_value": “physnet1"}
       ]
     }
   ],
   "hpa-feature-attributes": [
     {
       "hpa-attribute-key": "pciVendorId",
       "hpa-attribute-value": "1234", "operator": "=", "unit": ""
     },
     {
       "hpa-attribute-key": "pciDeviceId",
       "hpa-attribute-value": "5678", "operator": "=", "unit": ""
     },
     {
       "hpa-attribute-key": "pciCount",
       "hpa-attribute-value": "1", "operator": ">=", "unit": ""
     },
     {
       "hpa-attribute-key": "physicalNetwork",
       "hpa-attribute-value": "physnet1", "operator": "=", "unit": "“
     }
   ]
  },
]
```

VF-C — OOF Homing

OOF: ONAP Optimization Framework
OSDF: Optimization Service Design Framework
HAS: Homing Allocation Service



1. VFC sends out homing request to OOF(OSDF) containing resource info
2. OOF(OSDF) pulls all the related homing constraints from Policy
3. OOF(HAS) check AAI database to pull region(flavor) information
4. OOF(OSDF) returns homing allocation solution to VFC

OOF Homing

hpa-capability-id="ty53fd3d-0b15-11w4-81b2-6210efc6dff9",

hpa-feature="sriovNICNetwork",

architecture="intel64",

hpa-version="v1",

hpa-attribute-key	hpa-attribute-value
pciCount	{value: 1}
pciVendorId	{value: "1234"}
pciDeviceId	{value: "5678"}
physicalNetwork	{value:"physnet1"}

AAI


```
"flavorLabel":"vcpe.vgw",
"flavorProperties":[{
   "hpa-feature": "sriovNICNetwork",
   "mandatory": "True",
   "architecture": "generic",
   "hpa-version": "v1",
   "directives" : [
     {
       "type": "sriovNICNetwork_directives",
       "attributes": [
         {"attribute_name": “vgw_vnic_type", "attribute_value": "direct"},
         {"attribute_name": “vgw_provider_network", "attribute_value": "physnet1"}
       ]
     }
   ],
   "hpa-feature-attributes": [
     {
       "hpa-attribute-key": "pciVendorId",
       "hpa-attribute-value": "1234", "operator": "=", "unit": ""
     },
     {
       "hpa-attribute-key": "pciDeviceId",
       "hpa-attribute-value": "5678", "operator": "=", "unit": ""
     },
     {
       "hpa-attribute-key": "pciCount",
       "hpa-attribute-value": "1", "operator": ">=", "unit": ""
     },
     {
       "hpa-attribute-key": "physicalNetwork",
       "hpa-attribute-value": "physnet1", "operator": "=", "unit": "“
     }
   ]
  },
]
```


Policy

VFC Create network and port

```
"type": "sriovNICNetwork_directives",
 "attributes": [
   {"attribute_name": “vgw_vnic_type", "attribute_value": "direct"},
   {"attribute_name": “vgw_provider_network", "attribute_value": "physnet1"}
```

a. Create network, ports

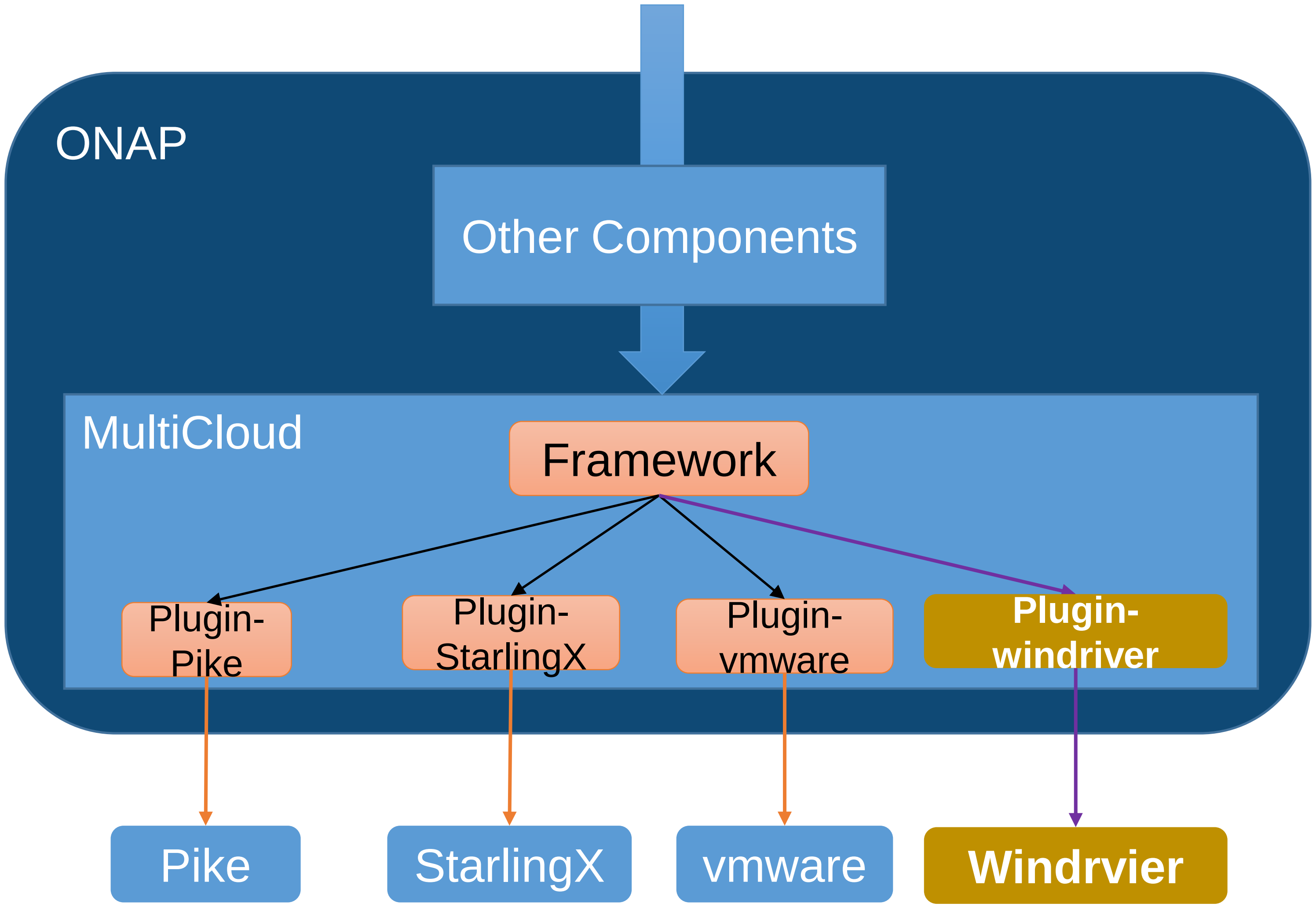
openstack network create --provider-network-type vlan --provider-physical-network physnet1 tst-network

openstack port create --name sriov-port --binding:vnic-type direct

b. Create server

openstack server create --flavor onap.hpa.flavor11 --image Ubuntu_16.04 --nic port-id= test-sriov-nic

MultiCloud



SO and VFC will call Framework

Thank you!