HOW ONAP ORCHESTRATES A CNF TO STARLINGX

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Contents

Overview

This is a detailed How-To document to illustrate how users could leverage ONAP to orchestrate CNF to STARLINGX 3.0 instance.

The general deployment topology is depicted as diagram below:

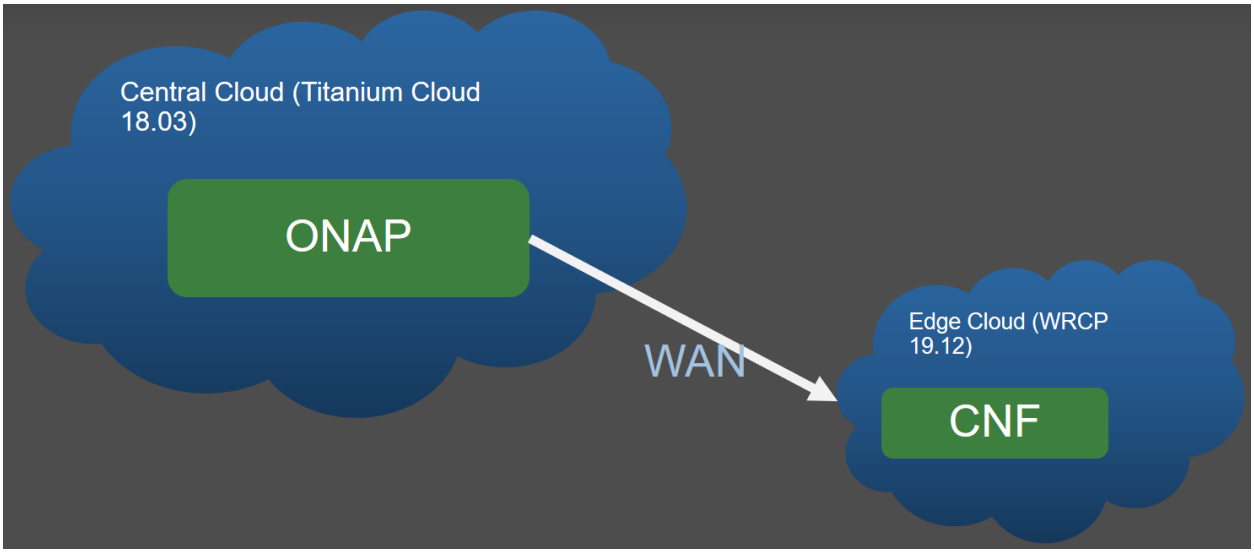


Diagram 1: ONAP and the cloud hosting it, STARLINGX, CNF topology

The comprehensive workflow consists of following phases:

Phase 1: STARLINGX 3.0 installation and provisions

Phase 2: CNF development and validation

Phase 3: ONAP installation and provisions

Phase 4: Register STARLINGX instance to ONAP

Phase 5: CNF onboarding and service design

Phase 6: Service Instantiation hence CNF instantiation and validation

Phase 7: Service deletion hence CNF deletion

Phase 1: STARLINGX installation and provisions

STARLINGX (19.12 or later version) installation could be Duplex, and Standard type. STARLINGX Distributed Cloud mode is also supported.

Note: AIO Simplex is insufficient for ONAP deployment due to the limitation of maximum 110 pods per worker node

Due to CNF requiring multiple networking plane, the STARLINGX must be provisioned with:

- Datanetwork backend by SRIOV netdevice (at least 2 vlan ID to support 2 network planes of the cFW use case)
    - In case This SRIOV netdevice is not available, host netdevice passthrough could be used as well.
    - veth pair could also be used for demonstration purpose, with constraint that all pods should be scheduled to the same worker node
- Hugepage-2M: 512x2M for each NUMA node for worker nodes
- Dedicated Tenant and user with admin role
- Kubernetes service account with clusterrolebindings and privileges to operate various resource, including namespace, etc.

Phase 2: CNF development and validation

The CNF should be developed and validated over STARLINGX 3.0 directly (without ONAP's orchestration)

The example CNF is containerized Firewall use case (referred as cFW in context below):

https://gerrit.onap.org/r/gitweb?p=multicloud/k8s.git;a=tree;f=starlingx/demo;h=44ab83ca5c5c9f01082695b1aa9a6e71fdaeec20;hb=HEAD

It consists of 3 pods, connected through 2 network planes. The topology is depicted as below:

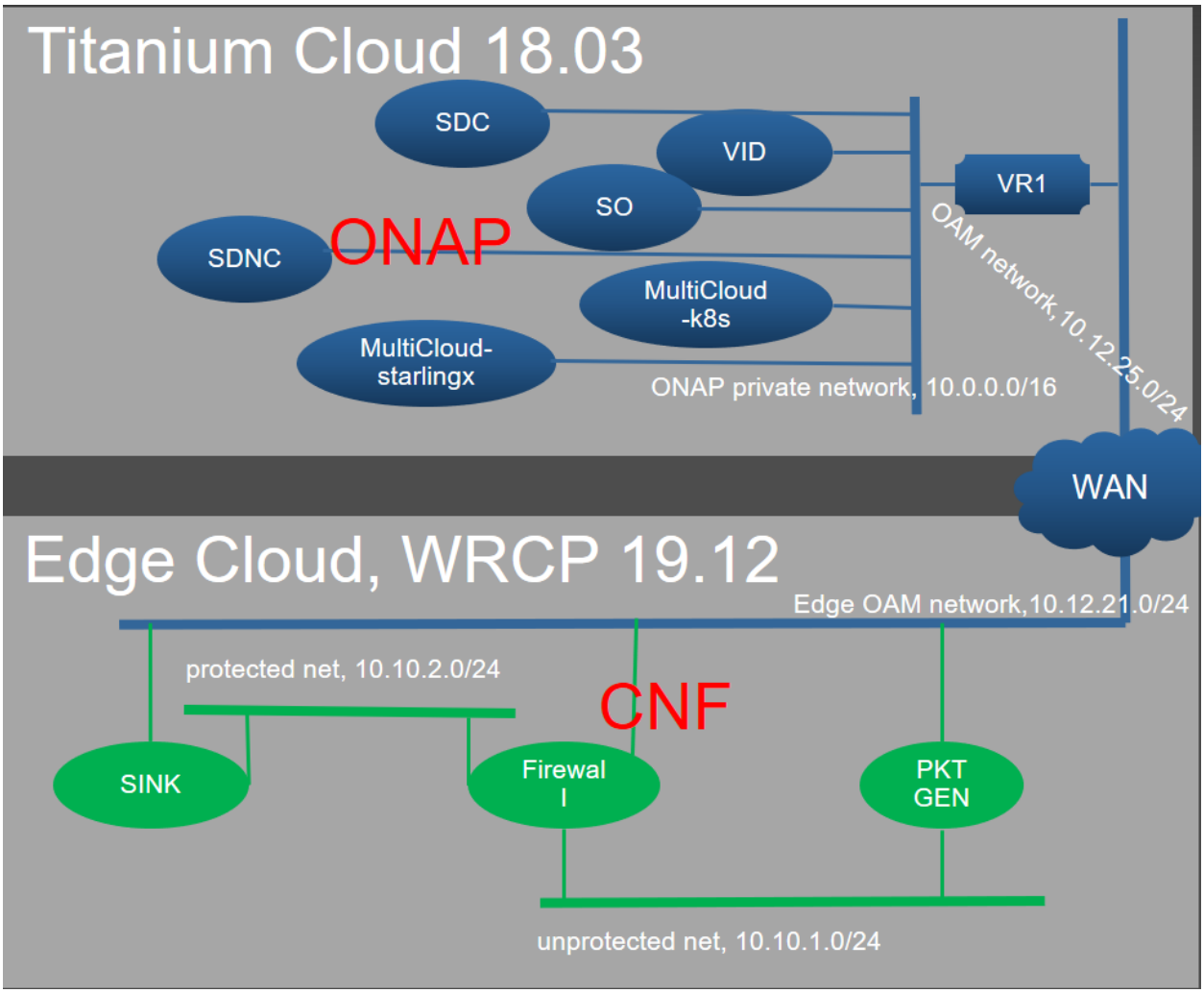


Diagram2: ONAP and cFW components

Use helm to validate the CNF,e.g. cFW:

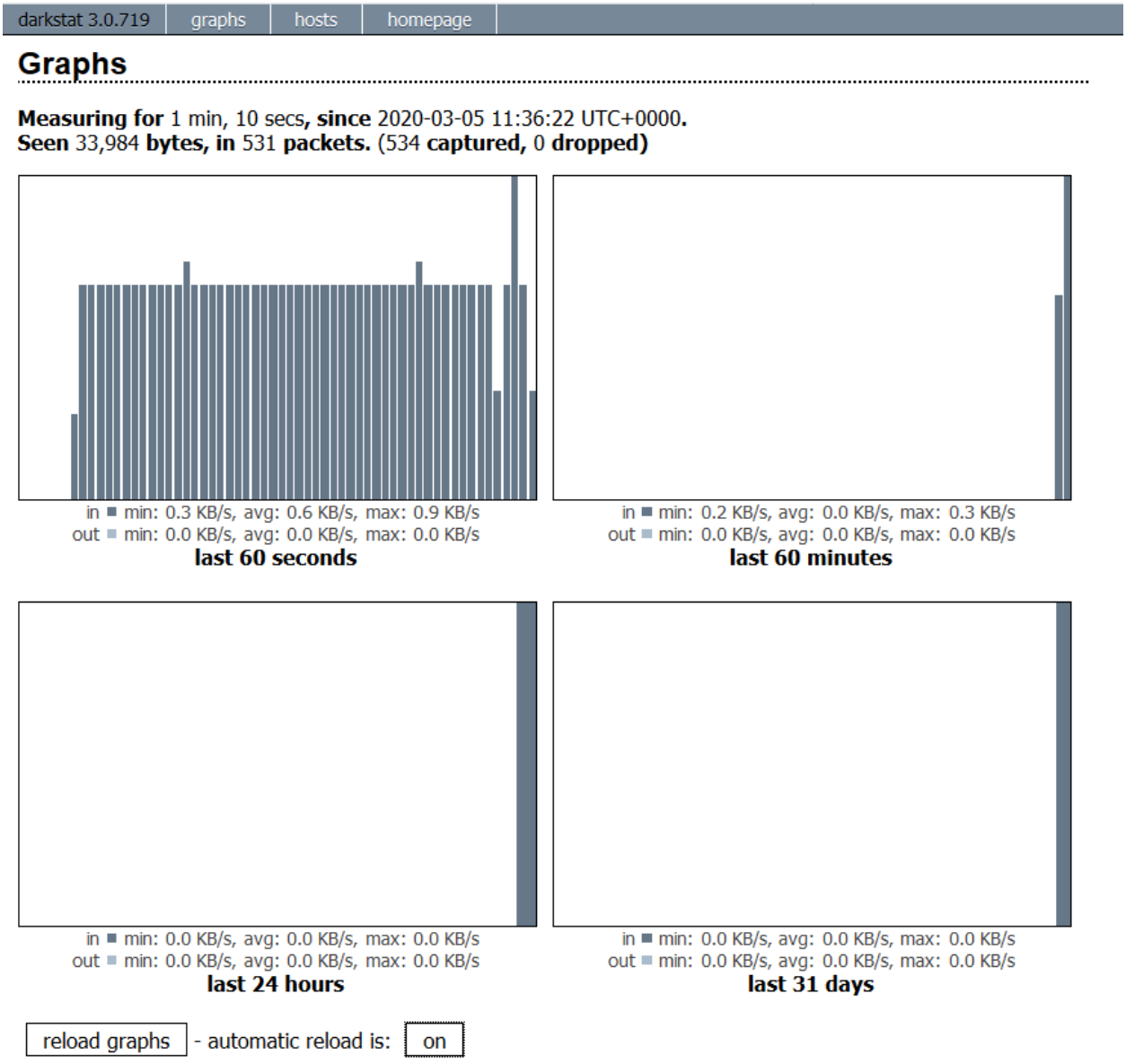
```
$ git clone "https://gerrit.onap.org/r/multicloud/k8s"
```

$ cd k8s/starlingx/demo

```
$helm install firewall-sriov -n cfw1
```

To validate of the deployed cFW, monitoring the traffic over SINK pod with your browser (Chrome, Firefox) to open following url (replace NODE_IP with any worker node IP of the STARLINGX instance):
http://$NODE_IP:30667/

You should observe traffic diagram likes below:



Snapshot 1: sink traffic monitor page

Phase 3: ONAP installation and provisions

Deploy ONAP instance with el alto release, with overrides to update multicloud services

Deploy the ONAP instance over STARLINGX

STARLINGX can also host ONAP. Due to kubernetes version difference , the upstream ONAP oom charts will be updated with following aspects:

1) Change the API versions (for deployment, statefulset, etc.) to “apps/v1”.
2) Use StorageClass “nfs” (by stable/nfs-server-provisioner) for PVC requiring ReadWriteMany access mode.
3) Use default StorageClass “general” (by ceph rbd-provisioner) for PVC without requiring ReadWriteMany access mode.
4) Fixing bug

The changes above introduce so many patches to oom charts, for now, they are maintained over the forked oom repos:

https://github.com/biny993/oom/tree/elalto-starlingx3

https://github.com/biny993/aai-oom/tree/elalto-starlingx3

https://github.com/biny993/testsuite-oom/tree/elalto-starlingx3

Note: The resource usage by ONAP installation with default override values (https://github.com/biny993/oom/blob/elalto-starlingx3/integration-override.yaml) :

CPU: 11 cores; Memory: 32GB, Persistence Volume: 80GB

Step 1) Deploy nfs-server-provisioner

Create ServiceAccount:

kubectl -n default create sa ben

kubectl create clusterrolebinding ben-admin --clusterrole cluster-admin --serviceaccount default:ben

Clone the helm charts:

```
git clone https://github.com/helm/charts.git
cd charts
```

Change the default values as below:

```
diff --git a/stable/nfs-server-provisioner/values.yaml b/stable/nfs-server-provisioner/values.yaml
index 6da0e1327..8c75f4788 100644
--- a/stable/nfs-server-provisioner/values.yaml
+++ b/stable/nfs-server-provisioner/values.yaml
@@ -35,7 +35,7 @@ service:
   externalIPs: []

 persistence:
-  enabled: false
+  enabled: true

   ## Persistent Volume Storage Class
   ## If defined, storageClassName: <storageClass>
@@ -47,7 +47,7 @@ persistence:
   # storageClass: "-"

   accessMode: ReadWriteOnce
-  size: 1Gi
+  size: 180Gi

 ## For creating the StorageClass automatically:
 storageClass:
@@ -77,11 +77,11 @@ storageClass:

 ## For RBAC support:
 rbac:
-  create: true
+  create: false

   ## Ignored if rbac.create is true
   ##
-  serviceAccountName: default
+  serviceAccountName: ben

 resources: {}
   # limits:
@@ -95,4 +95,13 @@ nodeSelector: {}

 tolerations: []

-affinity: {}
```

```
+affinity:
+  nodeAffinity:
+    requiredDuringSchedulingIgnoredDuringExecution:
+      nodeSelectorTerms:
+      - matchExpressions:
+        - key: kubernetes.io/hostname
+          operator: In
+          values:
+          - controller-0
+          - controller-1
```

now apply the helm charts:

```
cd stable
helm install nfs-server-provisioner --namespace=default --name nfsserver1 -f nfs-server-provisioner/values.yaml
```

check the storageclass “nfs”:

```
$ kubectl get pods -n default
NAME                                READY   STATUS    RESTARTS   AGE
nfsserver1-nfs-server-provisioner-0   1/1     Running   0          6d14h

$ kubectl get sc
NAME              PROVISIONER                                    AGE
general (default)   ceph.com/rbd                                   75d
nfs               cluster.local/nfsserver1-nfs-server-provisioner   8d
```

Step 2) Prepare namespace for ONAP deployment

ssh to STARLINGX controller node, perform following commands:

```
kubectl create ns onap

source /etc/platform/openrc

cat <<EOF > rbd-namespaces.yaml
classes:
- additionalNamespaces: [default, kube-public, onap]
  chunk_size: 64
  crush_rule_name: storage_tier_ruleset
  name: general
  pool_name: kube-rbdkube-system
  replication: 1
  userId: ceph-pool-kube-rbd
  userSecretName: ceph-pool-kube-rbd
```

EOF

system helm-override-update --values rbd-namespaces.yaml platform-integ-apps rbd-provisioner kube-system

system application-apply platform-integ-apps

Step 3) Deploy ONAP with integration override values

clone the following repo to local host, then copy it to STARLINGX controller node

git clone `--recurse-submodules` https://github.com/biny993/oom.git -b elalto-starlingx3

tar -zcvf oom-elalto-starlingx3.tgz oom
scp oom-elalto-starlingx3.tgz sysadmin@<STARLINGX OAM IP>:~/

login to STARLINGX controller node, perform following command over STARLINGX controller node
helm serve &

tar -zxvf oom-elalto-starlingx3.tgz
cd oom
rsync -avt kubernetes/helm/plugins ~/.helm/
sed -i "/\^enabled:/a\ echo sleep 30s\n sleep 30s" ~/.helm/plugins/deploy/deploy.sh
sed -i 's/for subchart in */for subchart in aaf cassandra mariadb-galera dmaap */' ~/.helm/plugins/deploy/deploy.sh

cd kubernetes
make all
cd ..

helm deploy dev local/onap -f ./kubernetes/onap/resources/environments/public-cloud.yaml -f ./integration-override.yaml --namespace onap

rsync -avt kubernetes/helm/plugins ~/.helm/

Step 4) Verify and checkpoints

check statefulset, all should be ready

```
$ kubectl -n onap get sts
```

check jobs, all should be completed

```
$ kubectl -n onap get jobs.batch
```

Check pods states, all pods should be either in completed or running state, except the following one:

```
$ kubectl -n onap get pod
dev-aai-aai-graphgraph-67fdb7db7f-p8sxf          0/1     ImagePullBackOff   0          30m
```

Check PVC, all PVC should be in bound state

```
$ kubectl -n onap get pvc
```

Attachement 7: Dump ONAP components status

ONAP provisions: Update SO configurations

(Note, this step can be skipped in case ONAP is deployed with approach 2 above)

----ONAP SO VNF Adapter Rest API endpoint version shall be set to version “v2”

```
$ kubectl -n onap get configmap | grep so-so-bpmn-infra-app-configmap
$ kubectl -n onap edit configmap dev-so-so-bpmn-infra-app-configmap
### in the section “vnf”, modify the rest endpoint:
      vnf:
        endpoint: http://so-openstack-adapter.onap:8087/services/VnfAdapter
        rest:
-         endpoint: http://so-openstack-adapter.onap:8087/services/rest/v1/vnfs
+         endpoint: http://so-openstack-adapter.onap:8087/services/rest/v2/vnfs
      volume-groups:
        rest:
          endpoint: http://so-openstack-adapter.onapg:8087/services/rest/v1/volume-groups

$ kubectl get po -n onap |grep bpmn-infra
$ kubectl -n onap delete pod dev-so-so-bpmn-infra-65945c685d-cfw92
### check if pods restarted
$ kubectl -n onap get po | grep so-so
```

ONAP Health Check

$ cd oom/kubernetes/robot/

$ ./ete-k8s.sh onap health

Please refer to the example output of ONAP health check: Attachment 5: Example output of ONAP Health Check

ONAP provisions: Populate demonstration data

$ cd oom/kubernetes/robot/

$ ./demo-k8s.sh onap init

Now wait about half an hour for completion of the demo data population: Attachement 6: Example output of populating ONAP demo data

In case of failure of init script, you may need populate necessary data , by curl command, refer to Tip 2: Postman collections for help curl commands in postman collection: requests 0,1,2,3,4, and populate demo VNFs by: $ ./demo-k8s.sh onap distribute

Access to ONAP portals

Update hosts with following entries: <e.g. assume 10.12.6.76 is a k8s cluster node IP>

10.12.6.76 portal.api.simpledemo.onap.org

10.12.6.76 vid.api.simpledemo.onap.org

10.12.6.76 sdc.api.fe.simpledemo.onap.org

10.12.6.76 sdc.api.be.simpledemo.onap.org

10.12.6.76 sdc.workflow.plugin.simpledemo.onap.org

10.12.6.76 sdc.dcae.plugin.simpledemo.onap.org

10.12.6.76 portal-sdk.simpledemo.onap.org

10.12.6.76 policy.api.simpledemo.onap.org

10.12.6.76 aai.api.sparky.simpledemo.onap.org

10.12.6.76 cli.api.simpledemo.onap.org

10.12.6.76 msb.api.discovery.simpledemo.onap.org

10.12.6.76 msb.api.simpledemo.onap.org

10.12.6.76 clamp.api.simpledemo.onap.org

10.12.6.76 so.api.simpledemo.onap.org

10.12.6.76 sdnc.api.simpledemo.onap.org

10.12.6.76 so-monitoring

Use a browser (Chrome, Firefox) to open the following URL, and input username/password:

https://portal.api.simpledemo.onap.org:30225/ONAPPORTAL/login.htm

Here is the list of users with roles, passwords defaults to “demo123456!”:

Role	User ID	Password	
designer	cs0008	demo123456!	
tester	jm0007	demo123456!	
governance Rep	gv0001	demo123456!	
ops	op0001	demo123456!	
admin	demo	demo123456!	

Note 1: The first time to access applications of ONAP portal might end up with certification error, to workaround that, you need browse the following urls and add them as security exceptions.

1, https://sdc.api.fe.simpledemo.onap.org:30207/sdc1/portal#!/adminDashboard

2, https://vid.api.simpledemo.onap.org:30200/vid/welcome.htm

Note 2: in case that so-monitoring GUI fails to show up, use browser to open the following url directly: http://so-monitoring:30224/

Phase 4: Register STARLINGX instance to ONAP

Registering STARLINGX to ONAP demands following information and multiple manual steps via curl command or postman:

- Keystone endpoint URL for OpenStack API access, along with Project(Tenant) name, Domain name, User ID, Password
- Tiller endpoint URL and Service account Token for Kubernetes API access
- Figure out a cloud region ID, e.g. Cloud Owner = WRCP2, Cloud Region ID = STXRegionOne

Step 1: Create a SO Cloud Site

```
$ kubectl -n onap get pod | grep mariadb-galera

$ kubectl -n onap exec -ti dev-mariadb-galera-mariadb-galera-0 sh

        mysql --user=so_admin --password=so_Admin123

        USE catalogdb

        select * from cloud_sites;

        INSERT INTO cloud_sites(ID, REGION_ID, IDENTITY_SERVICE_ID, CLOUD_VERSION, CLLI, ORCHESTRATOR) values("STXRegionOne", "STXRegionOne", "DEFAULT_KEYSTONE", "2.5", "My_Complex", "multicloud");

        select * from cloud_sites;

        quit

$ exit
```

Step 2: Create an AAI Cloud Region along with complex

Post following RestAPI to Create AAI Complex :

```
$ curl -X PUT \

https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/cloud-infrastructure/complexes/complex/My_Complex \
```

```
-H 'Accept: application/json' \
-H 'Authorization: Basic QUFJOkFBSQ==' \
-H 'Cache-Control: no-cache' \
-H 'Content-Type: application/json' \
-H 'Real-Time: true' \
-H 'X-FromAppId: jimmy-postman' \
-H 'X-TransactionId: 9999' \
-d '{
  "physical-location-id": "My_Complex",
  "data-center-code": "example-data-center-code-val-5556",
  "complex-name": "My_Complex",
  "identity-url": "example-identity-url-val-56898",
  "physical-location-type": "example-physical-location-type-val-7608",
  "street1": "example-street1-val-34205",
  "street2": "example-street2-val-99210",
  "city": "Beijing",
  "state": "example-state-val-59487",
  "postal-code": "100000",
  "country": "example-country-val-94173",
  "region": "example-region-val-13893",
  "latitude": "39.9042",
  "longitude": "106.4074",
  "elevation": "example-elevation-val-30253",
  "lata": "example-lata-val-46073"
  }' –k
```

For **standalone** STARLINGX instance (compared to sub-cloud of STARLINGX Distributed Cloud), post following RestAPI request to ONAP MSB endpoint via curl command or postman (replace those placeholder marked by <>):

```
$ CLOUD_OWNER=WRCP2

$ CLOUD_REGIONID=STXRegionOne

$ curl -X PUT \

https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/cloud-infrastructure/cloud-regions/cloud-region/${CLOUD_OWNER}/${CLOUD_REGIONID} \

-H 'Accept: application/json' \

-H 'Authorization: Basic QUFJOkFBSQ==' \

-H 'Cache-Control: no-cache' \

-H 'Content-Type: application/json' \

-H 'Postman-Token: 8b9b95ae-91d6-4436-90fa-69cb4d2db99c' \

-H 'Real-Time: true' \

-H 'X-FromAppId: jimmy-postman' \

-H 'X-TransactionId: 9999' \

-d '{

   "cloud-owner": "WRCP2",

   "cloud-region-id": "STXRegionOne",

   "cloud-type": "openstack",

   "owner-defined-type": "t1",

   "cloud-region-version": "starlingx",

   "complex-name": "My_Complex",

   "cloud-zone": "CloudZone",

   "sriov-automation": false,

   "identity-url": "",
```

"cloud-extra-info":"{\"openstack-region-id\":\"RegionOne\",\"k8s-apiserver\":\"https://<starlingx controller IP>:6443\",\"k8s-apitoken\":\"<service account token>\"}",

"relationship-list": {
"relationship": [
{
"related-to": "complex",
"relationship-label": "org.onap.relationships.inventory.LocatedIn",
"related-link": "/aai/v16/cloud-infrastructure/complexes/complex/My_Complex",
"relationship-data": [
{
"relationship-key": "complex.physical-location-id",
"relationship-value": "My_Complex"
}
]
}
]
},
"esr-system-info-list": {
"esr-system-info": [
{
"esr-system-info-id": "55f97d59-6cc3-49df-8e69-926565f00055",
"service-url": "http://<starlingx controller IP>:5000/v3",
"user-name": "<OpenStack username>",
"password": "<Openstack user pass>",
"system-type": "VIM",
"ssl-insecure": true,
"cloud-domain": "Default",

```
        "default-tenant": "<OpenStack Project/Tenant name, e.g. onap-sb-01>"
      }
    ]
  }
}' -k
```

For **sub-cloud** of STARLINGX Distributed Cloud, post following RestAPI request to ONAP MSB endpoint via curl command or postman (replace those placeholder marked by <>):

```
CLOUD_OWNER=WRCP2
CLOUD_REGIONID=STXRegionOne
OPENSTACK_REGIONID=Alameda-0000

curl -X PUT \
https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/cloud-infrastructure/cloud-regions/cloud-region/${CLOUD_OWNER}/${CLOUD_REGIONID} \
-H 'Accept: application/json' \
-H 'Authorization: Basic QUFJOkFBSQ==' \
-H 'Cache-Control: no-cache' \
-H 'Content-Type: application/json' \
-H 'Postman-Token: 8b9b95ae-91d6-4436-90fa-69cb4d2db99c' \
-H 'Real-Time: true' \
-H 'X-FromAppId: jimmy-postman' \
-H 'X-TransactionId: 9999' \
-d '{
  "cloud-owner": "WRCP2",
  "cloud-region-id": "STXRegionOne",
  "cloud-type": "openstack",
```

```
    "owner-defined-type": "t1",
    "cloud-region-version": "starlingx",
    "complex-name": "My_Complex",
    "cloud-zone": "CloudZone",
    "sriov-automation": false,
    "identity-url": "",
     "cloud-extra-info":"{\"openstack-region-id\":\"Alameda-0000\",\"k8s-
  apiserver\":\"https://<starlingx sub-cloud public OAM IP>:6443\",\"k8s-apitoken\":\"<service
  account token>\",\"isystem\": {\"software_version\": \"19.12\"} }",
      "relationship-list": {
        "relationship": [
          {
            "related-to": "complex",
            "relationship-label": "org.onap.relationships.inventory.LocatedIn",
            "related-link": "/aai/v16/cloud-infrastructure/complexes/complex/My_Complex",
            "relationship-data": [
              {
                "relationship-key": "complex.physical-location-id",
                "relationship-value": "My_Complex"
              }
            ]
          }
        ]
  },
"esr-system-info-list": {
   "esr-system-info": [
     {
       "esr-system-info-id": "55f97d59-6cc3-49df-8e69-926565f00055",
```

```
            "service-url": "http://<System Controller public OAM IP>:5000/v3",
            "user-name": "<OpenStack username>",
            "password": "<Openstack user pass>",
            "system-type": "VIM",
            "ssl-insecure": true,
            "cloud-domain": "Default",
            "default-tenant": "<OpenStack Project/Tenant name, e.g. onap-sb-01>"
          }
        ]
      }
    }' -k
```

Step 3: Trigger MultiCloud registration process:

```
$ curl -X POST \
https://msb.api.discovery.simpledemo.onap.org:30283/api/multicloud-starlingx/v1/${CLOUD_OWNER}/${CLOUD_REGIONID}/registry \
-H 'Accept: application/json' \
-H 'Cache-Control: no-cache' \
-H 'Content-Type: application/json' -k
```

Step 4: associate subscription with Cloud Region

Create Customer if necessary (e.g. democustomer1) :

```
    $ curl -k --location --request PUT 'https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/business/customers/customer/democustomer1' \
    --header 'Authorization: Basic QUFJOkFBSQ==' \
    --header 'X-FromAppId: AAI' \
```

```
--header 'Accept: application/json' \
--header 'Content-Type: application/json' \
--header 'X-TransactionId: 808b54e3-e563-4144-a1b9-e24e2ed93d4f' \
--data-raw '{
   "global-customer-id": "democustomer1",
   "subscriber-name": "democustomer1",
   "subscriber-type": "INFRA"
}'
```

Step 4: Add service type “cfw-k8s”:

```
$ curl -k --location --request PUT 'https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/service-design-and-creation/services/service/cfw-k8s' \
--header 'Authorization: Basic QUFJOkFBSQ==' \
--header 'X-FromAppId: AAI' \
--header 'Accept: application/json' \
--header 'X-TransactionId: 808b54e3-e563-4144-a1b9-e24e2ed93d4f' \
--header 'Content-Type: application/json' \
--data-raw '{
"service-id": "cfw-k8s",
"service-description": "cfw-k8s"
}'
```

```
$ curl -k --location --request PUT 'https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/business/customers/customer/democustomer1/service-subscriptions/service-subscription/cfw-k8s' \
--header 'Authorization: Basic QUFJOkFBSQ==' \
--header 'X-FromAppId: AAI' \
```

```
--header 'Accept: application/json' \
--header 'Content-Type: application/json' \
--header 'X-TransactionId: 808b54e3-e563-4144-a1b9-e24e2ed93d4f' \
--data-raw '{
   "service-id": "cfw-k8s"
}'
```

Step 5: Associate subscription to Cloud Region:

```
$ curl -k --location --request PUT
'https://aai.api.sparky.simpledemo.onap.org:30233/aai/v16/business/customers/customer/democustomer1/
service-subscriptions/service-subscription/cfw-k8s/relationship-list/relationship' \
--header 'Authorization: Basic QUFJOkFBSQ==' \
--header 'X-FromAppId: AAI' \
--header 'Accept: application/json' \
--header 'Content-Type: application/json' \
--header 'X-TransactionId: 808b54e3-e563-4144-a1b9-e24e2ed93d4f' \
--data-raw '{
   "related-to": "tenant",
   "related-link": "/aai/v16/cloud-infrastructure/cloud-regions/cloud-
region/WRCP2/STXRegionOne/tenants/tenant/fd32fdd20ff5467ebef2de63468eb2e4",
   "relationship-data": [
      {
         "relationship-key": "cloud-region.cloud-owner",
         "relationship-value": "WRCP2"
      },
      {
         "relationship-key": "cloud-region.cloud-region-id",
```

```
        "relationship-value": "STXRegionOne"
      },
      {
        "relationship-key": "tenant.tenant-id",
        "relationship-value": "fd32fdd20ff5467ebef2de63468eb2e4"
      }
    ],
    "related-to-property": [
      {
        "property-key": "tenant.tenant-name",
        "property-value": "onap-sb-01"
      }
    ]
}'
```

Phase 5: CNF onboarding and service design

Refer to Phase 2, which develops and validates the CNF (cFW in this case), the following steps should be followed to onboard it to ONAP for service design.

Step 1: create a tar ball for the CNF helm chart

```
$ cd k8s/starlingx/demo

$ CNF_NAME=" cfwsriov1"

$ CNF_ARTIFACT_NAME="${CNF_NAME}_cloudtech_k8s_charts.tgz"

$ tar -czvf $CNF_ARTIFACT_NAME    firewall-sriov/
```

Step 2: Wrap helm chart tar ball into a dummy heat template artifact

Copy the attachment files here: base_dummy.yaml , base_dummy.env

then apply following commands:

```
$ cat <<EOF> MANIFEST.json

{

  "name": "",

  "description": "",

  "data": [

    {

      "file": "base_dummy.yaml",

      "type": "HEAT",

      "isBase": "true",

      "data": [

        {
```

```
            "file": "base_dummy.env",
            "type": "HEAT_ENV"
          }
        ]
      },
      {
        "file": "$CNF_ARTIFACT_NAME",
        "type": "CLOUD_TECHNOLOGY_SPECIFIC_ARTIFACTS"
      }
    ]
}
EOF
```

```
$ zip ${CNF_NAME}_vsp.zip base_dummy.env base_dummy.yaml MANIFEST.json $CNF_ARTIFACT_NAME
```

Now you have the VSP artifact named 'cfwsriov1_vsp.zip' ready for onboarding to SDC

Step 3: Onboard the VSP artifact 'cfwsriov1_vsp.zip' into ONAP SDC

Browser open URL: https://portal.api.simpledemo.onap.org:30225/ONAPPORTAL/login.htm

Open SDC application from ONAP portal, onboard the artifact "cfwsriov1_vsp.zip" as VSP, import it as a VF 'Cfwsriov1' (follow the instructions: https://docs.onap.org/en/elalto/guides/onap-user/design/vfcreation/index.html) .

Create Service 'cfwsvc1' and add the VF 'cfwsriov1'', test the service model, approve it, and distribute it (follow the instructions: https://docs.onap.org/en/elalto/guides/onap-user/design/service-design/index.html).

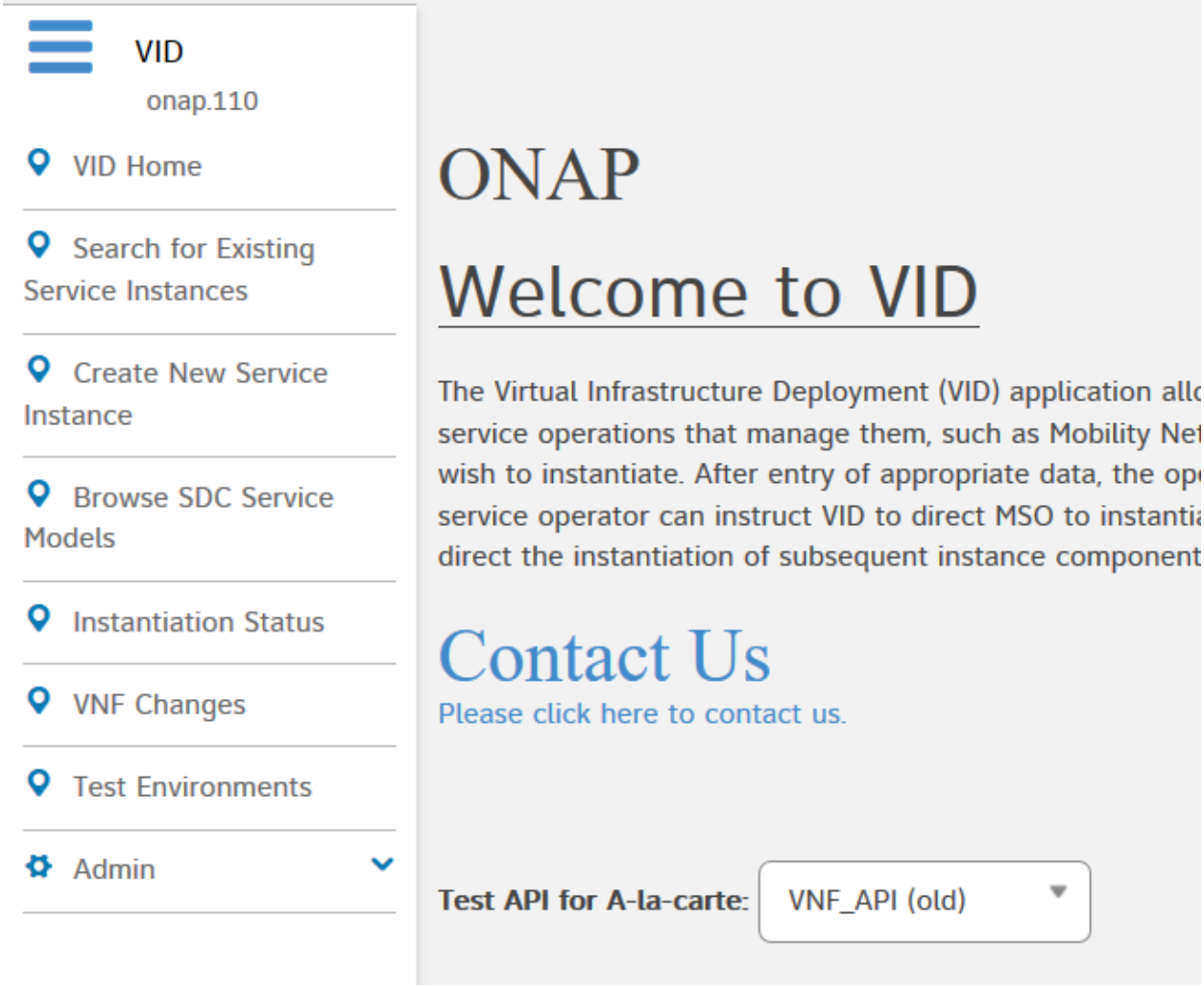
Phase 6: Service Instantiation hence CNF instantiation and validation

Once the service ‘cfwsvc1’ is distributed, you can instantiate it through VID application of ONAP portal.

Refer to https://docs.onap.org/en/elalto/submodules/vid.git/docs/instantiate.html for detailed instruction

Step 1, Create service instance

Create service instance ‘cfw1’ from service model ‘cfwsvc1’, make sure you select “VNF_API(old)” from the VID index page,



Then browse Service Models, select “cfwsvc1”, click “deploy” button, assign name with ‘cfw1’

Step 2, Add node instance ‘cfw1vf1’ for service instance ‘cfw1’

Add node instance ‘cfw1vf1’ for service instance ‘cfw1’, click the menu “add node instance” to add generic vnf: ’cfw1vf1’: input the generic vnf name, select the cloud region: WRCP2_STXRegion, and the tenant ‘onap-sb-01’, then click confirm button , wait for its completion

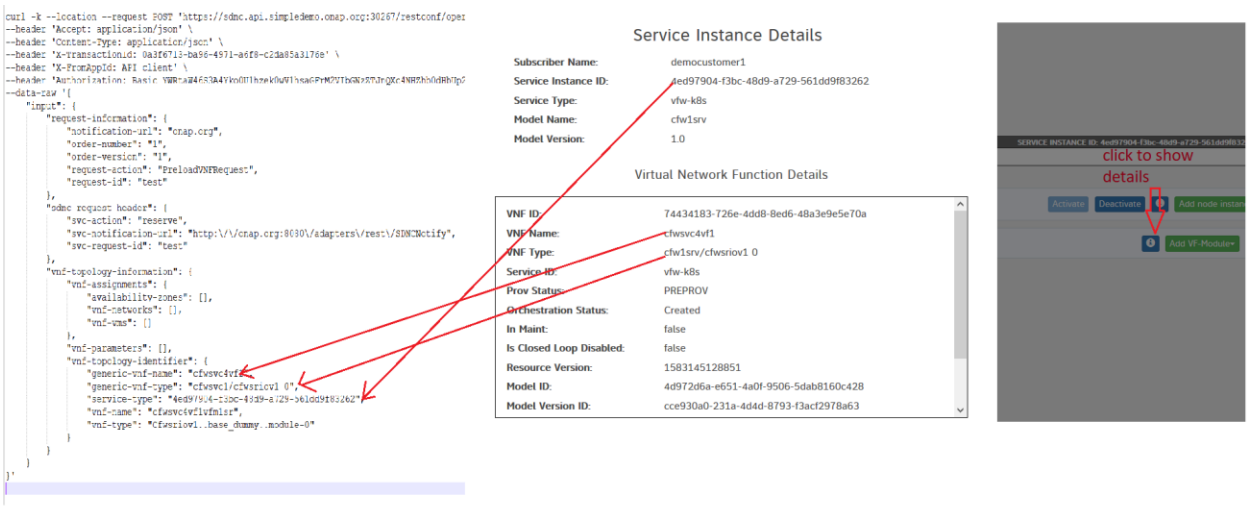
Step 3, Preload VNF topology

Preload VNF topology for VF Module ‘cfw1vf1vfmsriov1’ via curl command or postman

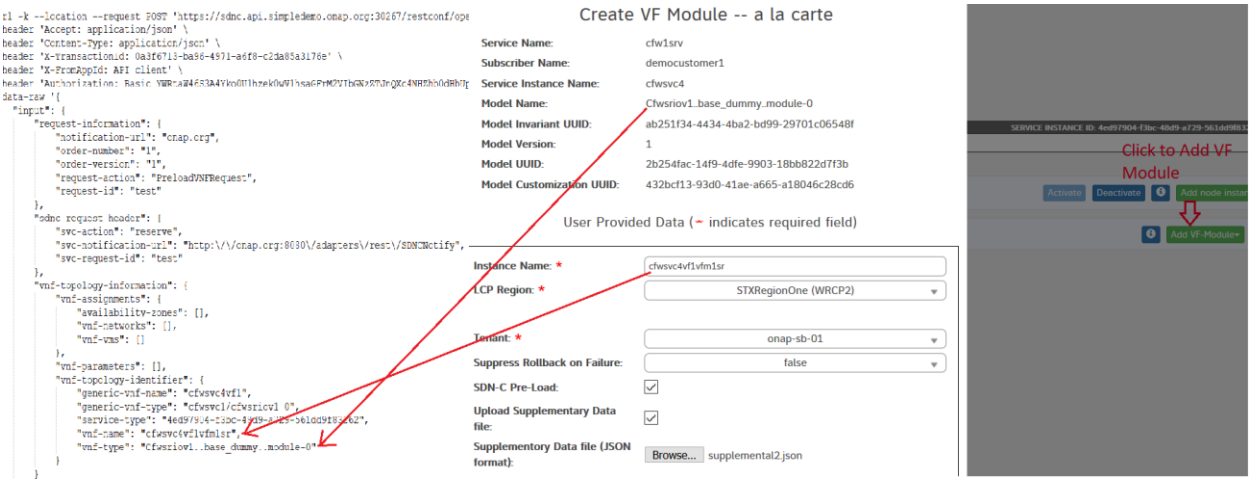
```
$ curl -k --location --request POST
'https://sdnc.api.simpledemo.onap.org:30267/restconf/operations/VNF-API:preload-vnf-topology-operation'
\
--header 'Accept: application/json' \
--header 'Content-Type: application/json' \
--header 'X-TransactionId: 0a3f6713-ba96-4971-a6f8-c2da85a3176e' \
--header 'X-FromAppId: API client' \
--header 'Authorization: Basic
YWRtaW46S3A4Yko0U1hzek0wV1hsaGFrM2VIbGNzZTJnQXc4NHZhb0dHbUp2VXkyVQ==' \
--data-raw '{
  "input": {
    "request-information": {
      "notification-url": "onap.org",
      "order-number": "1",
      "order-version": "1",
      "request-action": "PreloadVNFRequest",
      "request-id": "test"
    },
    "sdnc-request-header": {
      "svc-action": "reserve",
      "svc-notification-url": "http:\/\/onap.org:8080\/adapters\/rest\/SDNCNotify",
      "svc-request-id": "test"
```

```
    },
    "vnf-topology-information": {
      "vnf-assignments": {
        "availability-zones": [],
        "vnf-networks": [],
        "vnf-vms": []
      },
      "vnf-parameters": [],
      "vnf-topology-identifier": {
        "generic-vnf-name": "cfw1vf1",
        "generic-vnf-type": "cfwsvc1/cfwsriov1 0",
        "service-type": "4ed97904-f3bc-48d9-a729-561dd9f83262",
        "vnf-name": " cfw1vf1vfmsriov1'",
        "vnf-type": "Cfwsriov1..base_dummy..module-0"
      }
    }
  }
}'
```

Check the following example about how to populate the VNF topology request body:



Snapshot 3: populate VNF Topology request data, generic VNF and service type



Snapshot 4: populate VNF Topology request data, VF module part

Note, do not click “Confirm” button until runs to step 5 below.

Step 4, prepare supplement data file

Prepare override_values.yaml which override the helm charts’ values, encode the file content and put it into supplemental1.json for VF Module ‘cfw1vf1vfmsriov1’

$ cat << EOF > override_values.yaml

global:

```
 unprotectedNetProviderVlan: 29
 protectedNetProviderVlan: 30
 nodeAffinity:
  - label:
     labelkey: sriovdp
     op: In
     labelvalues:
      - enabled
  - label:
     labelkey:  kube-cpu-mgr-policy
     op: In
     labelvalues:
      - static
EOF

$ OVERRIDE_VALUES_YAML_BASE64=`cat override_values.yaml | base64 -w 0`

$ cat <<EOF > supplemental1.json
[
 {
  "name": "definition-name",
  "value": "Cfwsriov1..base_dummy..module-0"
 },
 {
  "name": "definition-version",
  "value": "1"
 },
```

```
 {
  "name": "profile-name",
  "value": "p1"
 },
 {
  "name": "template_type",
  "value": "heat"
 },
 {
  "name": "override_values_yaml_base64",
  "value": "$OVERRIDE_VALUES_YAML_BASE64"
 }
]
EOF
```

Step 5, Add VF Module

Add VF Module ‘cfw1vf1vfmsriov1’ for node instance ‘cfw1vf1’

From the popup dialog window, input the VF module name, select the cloud region: WRCP2_STXRegion, and the tenant ‘onap-sb-01’, check on the following options:

- SDN-C Pre-Lload
- Upload Supplementary Data file

Then upload the file ‘supplemental1.json’, click “confirm” button to start the VF module creation process and wait for its completion. This process will orchestrate cFW helm charts to STARLINGX instance. Hence you can check if the workload is deployed over STARLINGX instance with kubectl commands as well.

Step 6: validate the CNF deployment

Execute kubectl to check if deployments are there, check the pods status

```
$ kubectl get deployments -o wide --all-namespaces |grep firewall
```

```
$ kubectl get pods -o wide --all-namespaces |grep firewall
```

Monitor the traffic over SINK pod via browser: http://$NODE_IP:30667/ , you should observe the traffic statistics from the page. Refer to snapshot 1 for details.

Phase 7: Service deletion hence CNF deletion

With VID application GUI, Navigate to the deployed service instance ‘cfw1’ , delete VF module first, then delete node instance, then delete service.

Attachments

Attachment 1: integration-override.yaml

```
global:
  repository: nexus3.onap.org:10001
  pullPolicy: IfNotPresent
robot:
  enabled: true
  flavor: large
  appcUsername: "appc@appc.onap.org"
  appcPassword: "demo123456!"
  openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000>"
  openStackPublicNetId: "<tenant network UUID for public access,e.g. 971040b2-7059-49dc-b220-4fab50cb2ad4>"
  openStackTenantId: "<tenant ID of openstack user, e.g. 0e148b76ee8c42f78d37013bf6b7b1ae>"
  openStackUserName: "<tenant username, e.g. demo>"
  openStackUserDomain: "Default"
  openStackProjectName: "VIM"
  ubuntu14Image: "<glance image name for ubuntu14, e.g. ubuntu-14-04-cloud-amd64>"
  ubuntu16Image: "<glance image name for ubuntu16, e.g. ubuntu-16-04-cloud-amd64>"
  openStackPrivateNetId: "eda70926-a53f-458c-a621-40a64e72643d"
  openStackPrivateSubnetId: "4ef0889a-406f-488b-934e-52b3ad6aef3a"
  openStackPrivateNetCidr: "10.0.0.0/16"
  openStackSecurityGroup: "aa534410-959e-4c40-9480-b3ae5ec1d8d8"
  openStackOamNetworkCidrPrefix: "10.0"
  dcaeCollectorIp: "10.12.6.149"
  kubernetesExternalIp: "10.12.6.149"
  vnfPubKey: "<public key for ssh access to vnf>"
```

```
  demoArtifactsVersion: "1.6.0-SNAPSHOT"
  demoArtifactsRepoUrl: "https://nexus.onap.org/content/repositories/releases"
  scriptVersion: "1.6.0-SNAPSHOT"
  nfsIpAddress: "10.12.6.253"
  config:
    openStackEncryptedPasswordHere: "bbaef6cd76625ab9eb60deedeae7dbb9"
    openStackSoEncryptedPassword: ""
so:
  enabled: true
  so-catalog-db-adapter:
    config:
      openStackUserName: "<tenant username, e.g. demo>"
      openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000>"
      openStackEncryptedPasswordHere: ""
  so-bpmn-infra:
    config:
appc:
  enabled: true
  replicaCount: 3
  config:
    enableClustering: true
    openStackType: "OpenStackProvider"
    openStackName: "OpenStack"
    openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000/v2.0>"
    openStackServiceTenantName: "VIM"
    openStackDomain: "Default"
    openStackUserName: "<tenant username, e.g. demo>"
```

```
    openStackEncryptedPassword: "<tenant user password>"
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
sdnc:
  enabled: true
  replicaCount: 3
  config:
    enableClustering: true
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
aai:
  enabled: true
  liveness:
    initialDelaySeconds: 120
  aai-data-router:
    liveness:
      initialDelaySeconds: 120
  aai-sparky-be:
    liveness:
      initialDelaySeconds: 120
  aai-spike:
    liveness:
      initialDelaySeconds: 120
```

```
  aai-cassandra:
    replicaCount: 3
    liveness:
      periodSeconds: 120
    readiness:
      periodSeconds: 60
portal:
  enabled: true
  portal-cassandra:
    liveness:
      periodSeconds: 120
    readiness:
      periodSeconds: 60
vid:
  enabled: true
aaf:
  enabled: true
cassandra:
  enabled: true
  liveness:
    periodSeconds: 120
  readiness:
    periodSeconds: 60
clamp:
  enabled: true
cli:
  enabled: true
```

```
consul:
  enabled: true
contrib:
  enabled: true
dcaegen2:
  enabled: false
dmaap:
  enabled: true
  dmaap-dr-prov:
    mariadb:
      liveness:
        initialDelaySeconds: 180
        periodSeconds: 60
esr:
  enabled: true
log:
  enabled: false
  log-logstash:
    replicaCount: 1
sniro-emulator:
  enabled: true
oof:
  enabled: true
  oof-has:
    music:
      music-cassandra:
        replicaCount: 3
```

```
      liveness:
        periodSeconds: 120
      readiness:
        periodSeconds: 60
    music-tomcat:
      replicaCount: 1
mariadb-galera:
  enabled: true
  liveness:
    initialDelaySeconds: 180
    periodSeconds: 60
modeling:
  enabled: true
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
msb:
  enabled: true
multicloud:
  enabled: true
  image: onap/multicloud/framework:1.5.1
  multicloud-starlingx:
    image: onap/multicloud/openstack-starlingx:1.5.5
  multicloud-k8s:
    image: onap/multicloud/k8s:0.5.0
nbi:
```

```
  enabled: false
policy:
  enabled: true
pomba:
  enabled: false
sdc:
  enabled: true
  sdc-cs:
    liveness:
      periodSeconds: 120
    readiness:
      periodSeconds: 60
  sdc-be:
    liveness:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
    readiness:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
  sdc-fe:
    livenessProbe:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
    readinessProbe:
```

```
    initialDelaySeconds: 120
    periodSeconds: 120
    timeoutSeconds: 15
uui:
  enabled: false
vfc:
  enabled: false
  mariadb-galera:
   liveness:
    initialDelaySeconds: 180
    periodSeconds: 60
vnfsdk:
  enabled: false
cds:
  enabled: true
```

Attachment 2: onap-oom-lite.env

```
parameters:

  ubuntu_1804_image: <glance image name for ubuntu16, e.g. ubuntu-18.04>

  apt_proxy: ""
  docker_proxy: nexus3.onap.org:10001

  nfs_vm_flavor: m1.lm.xlarge
  k8s_vm_flavor: m1.lm.xlarge
```

```
orch_vm_flavor: m1.lm.medium

public_net_id: <tenant network UUID for public access,e.g. 971040b2-7059-49dc-b220-4fab50cb2ad4>

oam_network_cidr: 10.0.0.0/16
oam_ext_network_cidr: 10.100.0.0/16

integration_gerrit_branch: master

helm_deploy_delay: 30s

integration_override_yaml: >
 global:
   repository: __docker_proxy__
   pullPolicy: IfNotPresent
 robot:
   enabled: true
   flavor: large
   appcUsername: "appc@appc.onap.org"
   appcPassword: "demo123456!"
   openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000>"
   openStackPublicNetId: "__public_net_id__"
   openStackTenantId: "${OS_PROJECT_ID}"
   openStackUserName: "${OS_USERNAME}"
   openStackUserDomain: "${OS_USER_DOMAIN_NAME}"
   openStackProjectName: "${OS_PROJECT_NAME}"
   ubuntu14Image: "<glance image name for ubuntu14, e.g. ubuntu-14-04-cloud-amd64>"
```

```
  ubuntu16Image: "<glance image name for ubuntu16, e.g. ubuntu-16-04-cloud-amd64>"
  openStackPrivateNetId: "__oam_network_id__"
  openStackPrivateSubnetId: "__oam_subnet_id__"
  openStackPrivateNetCidr: "__oam_network_cidr__"
  openStackSecurityGroup: "__sec_group__"
  openStackOamNetworkCidrPrefix: "10.0"
  dcaeCollectorIp: "__k8s_01_vm_ip__"
  kubernetesExternalIp: "__k8s_01_vm_ip__"
  vnfPubKey: "<public key for ssh access to vnf>"
  demoArtifactsVersion: "1.6.0-SNAPSHOT"
  demoArtifactsRepoUrl: "https://nexus.onap.org/content/repositories/releases"
  scriptVersion: "1.6.0-SNAPSHOT"
  nfsIpAddress: "__nfs_ip_addr__"
  config:
   openStackEncryptedPasswordHere: "${OS_PASSWORD_ENCRYPTED_FOR_ROBOT}"
   openStackSoEncryptedPassword: "${OS_PASSWORD_ENCRYPTED}"
so:
  enabled: true
  so-catalog-db-adapter:
   config:
    openStackUserName: "${OS_USERNAME}"
    openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000/v2.0>"
    openStackEncryptedPasswordHere: "${OS_PASSWORD_ENCRYPTED}"
appc:
  enabled: true
  replicaCount: 3
  config:
```

```
    enableClustering: true
    openStackType: "OpenStackProvider"
    openStackName: "OpenStack"
    openStackKeyStoneUrl: "<keystone endpoint, e.g. http://10.12.25.2:5000/v2.0>"
    openStackServiceTenantName: "${OS_PROJECT_NAME}"
    openStackDomain: "${OS_USER_DOMAIN_NAME}"
    openStackUserName: "${OS_USERNAME}"
    openStackEncryptedPassword: "${OS_PASSWORD}"
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
sdnc:
  enabled: true
  replicaCount: 3
  config:
    enableClustering: true
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
aai:
  enabled: true
  liveness:
    initialDelaySeconds: 120
  aai-data-router:
    liveness:
```

```
    initialDelaySeconds: 120
  aai-sparky-be:
   liveness:
    initialDelaySeconds: 120
  aai-spike:
   liveness:
    initialDelaySeconds: 120
  aai-cassandra:
   replicaCount: 3
   liveness:
    periodSeconds: 120
   readiness:
    periodSeconds: 60
portal:
  enabled: true
  portal-cassandra:
   liveness:
    periodSeconds: 120
   readiness:
    periodSeconds: 60
vid:
  enabled: true
aaf:
  enabled: true
cassandra:
  enabled: true
  liveness:
```

```
    periodSeconds: 120
  readiness:
    periodSeconds: 60
clamp:
  enabled: true
cli:
  enabled: true
consul:
  enabled: true
contrib:
  enabled: true
dcaegen2:
  enabled: false
dmaap:
  enabled: true
  dmaap-dr-prov:
    mariadb:
      liveness:
        initialDelaySeconds: 180
        periodSeconds: 60
esr:
  enabled: true
log:
  enabled: false
  log-logstash:
    replicaCount: 1
sniro-emulator:
```

```
  enabled: true
oof:
  enabled: true
  oof-has:
    music:
      music-cassandra:
        replicaCount: 3
        liveness:
          periodSeconds: 120
        readiness:
          periodSeconds: 60
      music-tomcat:
        replicaCount: 1
mariadb-galera:
  enabled: true
  liveness:
    initialDelaySeconds: 180
    periodSeconds: 60
modeling:
  enabled: true
  mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
msb:
  enabled: true
multicloud:
```

```
  enabled: true
  image: onap/multicloud/framework:1.5.1
  multicloud-starlingx:
    image: onap/multicloud/openstack-starlingx:1.5.5
  multicloud-k8s:
    image: onap/multicloud/k8s:0.5.0
nbi:
  enabled: false
policy:
  enabled: true
pomba:
  enabled: false
sdc:
  enabled: true
  sdc-cs:
    liveness:
      periodSeconds: 120
    readiness:
      periodSeconds: 60
  sdc-be:
    liveness:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
    readiness:
      initialDelaySeconds: 120
      periodSeconds: 120
```

```
      timeoutSeconds: 15
    sdc-fe:
     livenessProbe:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
     readinessProbe:
      initialDelaySeconds: 120
      periodSeconds: 120
      timeoutSeconds: 15
  uui:
   enabled: false
  vfc:
   enabled: false
   mariadb-galera:
    liveness:
      initialDelaySeconds: 180
      periodSeconds: 60
  vnfsdk:
   enabled: false
  cds:
   enabled: true
```

Attachment 3: base_dummy.yaml

```
# #==================LICENSE_START=========================================
```

```
heat_template_version: 2016-10-14
description: Heat template to deploy dummy VNF

parameters:
 dummy_name_0:
   type: string
   label: name of vm
   description: Dummy name

 vnf_id:
   type: string
   label: id of vnf
   description: Provided by ONAP

 vnf_name:
   type: string
   label: name of vnf
   description: Provided by ONAP

 vf_module_id:
   type: string
```

```
  label: vnf module id
  description: Provided by ONAP

 dummy_image_name:
  type: string
  label: Image name or ID
  description: Dummy image name

 dummy_flavor_name:
  type: string
  label: flavor
  description: Dummy flavor

resources:
 dummy_0:
  type: OS::Nova::Server
  properties:
   name: { get_param: dummy_name_0 }
   image: { get_param: dummy_image_name }
   flavor: { get_param: dummy_flavor_name }
   metadata: { vnf_name: { get_param: vnf_name }, vnf_id: { get_param: vnf_id }, vf_module_id:
{ get_param: vf_module_id }}
```

Attachment 4: base_dummy.env

```
parameters:
```

vnf_id: PROVIDED_BY_ONAP

vnf_name: PROVIDED_BY_ONAP

vf_module_id: PROVIDED_BY_ONAP

dummy_name_0: dummy_1_0

dummy_image_name: dummy

dummy_flavor_name: dummy.default

Attachment 5: Example output of ONAP Health Check

```
oom/kubernetes/robot$ ./ete-k8s.sh onap health > h.1

oom/kubernetes/robot$ cat h.1

Starting Xvfb on display :90 with res 1280x1024x24
Executing robot tests at log level TRACE
==============================================================================
Testsuites
==============================================================================
Testsuites.Health-Check :: Test that ONAP components are available via basi...
==============================================================================
Basic A&AI Health Check                                               | PASS |
------------------------------------------------------------------------------
Basic AAF Health Check                                                | PASS |
------------------------------------------------------------------------------
Basic AAF SMS Health Check                                            | PASS |
------------------------------------------------------------------------------
Basic APPC Health Check                                               | FAIL |
ConnectionError: HTTPSConnectionPool(host='appc.onap', port=8443): Max retries exceeded with
url: /restconf/operations/SLI-API:healthcheck (Caused by
NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f90095faad0>:
Failed to establish a new connection: [Errno -2] Name or service not known',))
------------------------------------------------------------------------------
Basic CLI Health Check                                                | FAIL |
ConnectionError: HTTPConnectionPool(host='cli.onap', port=8080): Max retries exceeded with url:
/ (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at
0x7f900445f190>: Failed to establish a new connection: [Errno -2] Name or service not known',))
------------------------------------------------------------------------------
Basic CLAMP Health Check                                              | FAIL |
```

ConnectionError: HTTPSConnectionPool(host='clamp.onap', port=8443): Max retries exceeded with url: /restservices/clds/v1/healthcheck (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004d21710>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic DCAE Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='dcae-healthcheck.onap', port=80): Max retries exceeded with url: /healthcheck (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004467bd0>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic DMAAP Data Router Health Check | PASS |

Basic DMAAP Message Router Health Check | PASS |

Basic DMAAP Bus Controller Health Check With Basic Auth | PASS |

Basic External API NBI Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='nbi.onap', port=8080): Max retries exceeded with url: /nbi/api/v4/status (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004d21a10>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Log Elasticsearch Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='log-es.onap', port=9200): Max retries exceeded with url: / (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f900445f210>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Log Kibana Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='log-kibana.onap', port=5601): Max retries exceeded with url: / (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90061a7110>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Log Logstash Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='log-ls-http.onap', port=9600): Max retries exceeded with url: / (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004d2ef90>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Microservice Bus Health Check | PASS |

Basic Multicloud API Health Check | PASS |

Basic Multicloud-pike API Health Check | PASS |

Basic Multicloud-starlingx API Health Check | PASS |

Basic Multicloud-titanium_cloud API Health Check | PASS |

Basic Multicloud-vio API Health Check | PASS |

Basic Multicloud-k8s API Health Check | PASS |

Basic OOF-Homing Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='oof-has-api.onap', port=8091): Max retries exceeded with url: /v1/plans/healthcheck (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004441090>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic OOF-SNIRO Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='oof-osdf.onap', port=8698): Max retries exceeded with url: /api/oof/v1/healthcheck (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004441e50>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic OOF-CMSO Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='oof-cmso.onap', port=8080): Max retries exceeded with url: /cmso/v1/health?checkInterfaces=true (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004badad0>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Policy Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='drools.onap', port=6969): Max retries exceeded with url: /healthcheck (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004456450>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba AAI-context-builder Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-aaictxbuilder.onap', port=9530): Max retries exceeded with url: /aaicontextbuilder/health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004be3e10>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba SDC-context-builder Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-sdcctxbuilder.onap', port=9530): Max retries exceeded with url: /sdccontextbuilder/health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90043eb110>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Network-discovery-context-builder Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-networkdiscoveryctxbuilder.onap', port=9530): Max retries exceeded with url: /ndcontextbuilder/health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90043eb410>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Service-Decomposition Health Check | FAIL |

ConnectionError: HTTPConnectionPool(host='pomba-servicedecomposition.onap', port=9532): Max retries exceeded with url: /service-decomposition/health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90043f2b10>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Network-Discovery-MicroService Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='pomba-networkdiscovery.onap', port=9531): Max retries exceeded with url: /health (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004407090>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Pomba-Kibana Health Check | FAIL |
ConnectionError: HTTPSConnectionPool(host='pomba-kibana.onap', port=5601): Max retries exceeded with url: / (Caused by NewConnectionError('<urllib3.connection.VerifiedHTTPSConnection object at 0x7f9004441fd0>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Elastic-Search Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-es.onap', port=9200): Max retries exceeded with url: / (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004414290>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Sdnc-Context-Builder Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-sdncctxbuilder.onap', port=9530): Max retries exceeded with url: /sdnccontextbuilder/health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90043eb650>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Pomba Context-Aggregator Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='pomba-contextaggregator.onap', port=9529): Max retries exceeded with url: /health (Caused by NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f900439db10>: Failed to establish a new connection: [Errno -2] Name or service not known',))

Basic Portal Health Check | PASS |

Basic SDC Health Check (DMaaP:UP)
| PASS |

Basic SDNC Health Check | PASS |

Basic SO Health Check | PASS |

Basic UseCaseUI API Health Check | FAIL |
502 != 200

Basic VFC catalog API Health Check | FAIL |
502 != 200

Basic VFC emsdriver API Health Check | FAIL |
502 != 200

Basic VFC gvnfmdriver API Health Check | FAIL |
502 != 200

Basic VFC huaweivnfmdriver API Health Check | FAIL |
502 != 200

Basic VFC jujuvnfmdriver API Health Check | FAIL |
502 != 200

Basic VFC multivimproxy API Health Check | FAIL |
502 != 200

Basic VFC nokiav2driver API Health Check | FAIL |
502 != 200

Basic VFC nslcm API Health Check | FAIL |
502 != 200

Basic VFC resmgr API Health Check | FAIL |
502 != 200

Basic VFC vnflcm API Health Check | FAIL |
502 != 200

Basic VFC vnfmgr API Health Check | FAIL |
502 != 200

Basic VFC vnfres API Health Check | FAIL |
502 != 200

Basic VFC workflow API Health Check | FAIL |
502 != 200

Basic VFC ztesdncdriver API Health Check | FAIL |
502 != 200

Basic VFC ztevnfmdriver API Health Check | FAIL |
502 != 200

Basic VID Health Check | PASS |

Basic VNFSDK Health Check | FAIL |
ConnectionError: HTTPConnectionPool(host='refrepo.onap', port=8702): Max retries exceeded with url: /onapapi/vnfsdk-marketplace/v1/PackageResource/healthcheck (Caused by

```
NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f90042c86d0>: Failed to
establish a new connection: [Errno -2] Name or service not known',))
------------------------------------------------------------------------------
Basic Holmes Rule Management API Health Check                       | FAIL |
502 != 200
------------------------------------------------------------------------------
Basic Holmes Engine Management API Health Check                     | FAIL |
502 != 200
------------------------------------------------------------------------------
Basic Multicloud-fcaps API Health Check                             | PASS |
------------------------------------------------------------------------------
Basic Modeling genericparser API Health Check                       | FAIL |
502 != 200
------------------------------------------------------------------------------
Basic CDS Health Check                                              | FAIL |
ConnectionError: HTTPConnectionPool(host='cds-blueprints-processor-http.onap', port=8080):
Max retries exceeded with url: /api/v1/execution-service/health-check (Caused by
NewConnectionError('<urllib3.connection.HTTPConnection object at 0x7f9004bc8750>: Failed to
establish a new connection: [Errno -2] Name or service not known',))
------------------------------------------------------------------------------
Testsuites.Health-Check :: Test that ONAP components are available... | FAIL |
61 critical tests, 19 passed, 42 failed
61 tests total, 19 passed, 42 failed
==============================================================================
Testsuites                                                          | FAIL |
61 critical tests, 19 passed, 42 failed
61 tests total, 19 passed, 42 failed
==============================================================================
Output:  /share/logs/0000_ete_health/output.xml
Log:     /share/logs/0000_ete_health/log.html
Report:  /share/logs/0000_ete_health/report.html
```

Attachement 6: Example output of populating ONAP demo data

```
$ ./demo-k8s.sh onap init

Number of parameters:

2

KEY:

init

++ kubectl --namespace onap get pods

++ sed 's/ .*//'
```

```
++ grep robot
+ POD=dev-robot-robot-65cd75cc96-r9xqc
++ dirname ./demo-k8s.sh
+ DIR=.
+ SCRIPTDIR=scripts/demoscript
+ ETEHOME=/var/opt/ONAP
+ '[' ']'
++ kubectl --namespace onap exec dev-robot-robot-65cd75cc96-r9xqc -- bash -c 'ls -1q /share/logs/ | wc -l'
+ export GLOBAL_BUILD_NUMBER=1
+ GLOBAL_BUILD_NUMBER=1
++ printf %04d 1
+ OUTPUT_FOLDER=0001_demo_init
+ DISPLAY_NUM=91
+ VARIABLEFILES='-V /share/config/robot_properties.py'
+ kubectl --namespace onap exec dev-robot-robot-65cd75cc96-r9xqc -- /var/opt/ONAP/runTags.sh -V /share/config/robot_properties.py -d /share/logs/0001_demo_init -i InitDemo --display 91
Starting Xvfb on display :91 with res 1280x1024x24
Executing robot tests at log level TRACE
==============================================================================
Testsuites
==============================================================================
Testsuites.Demo :: Executes the VNF Orchestration Test cases including setu...
==============================================================================
Initialize Customer And Models                                | PASS |
------------------------------------------------------------------------------
Initialize SO Openstack Identity For V3                       | PASS |
------------------------------------------------------------------------------
```

```
Testsuites.Demo :: Executes the VNF Orchestration Test cases inclu... | PASS |

2 critical tests, 2 passed, 0 failed

2 tests total, 2 passed, 0 failed

==============================================================================

Testsuites                                    | PASS |

2 critical tests, 2 passed, 0 failed

2 tests total, 2 passed, 0 failed

==============================================================================

Output:  /share/logs/0001_demo_init/output.xml

Log:     /share/logs/0001_demo_init/log.html

Report:  /share/logs/0001_demo_init/report.html
```

Attachement 7: Dump ONAP components status

```
$ kubectl -n onap get sts
        NAME                          READY   AGE
        dev-aaf-aaf-sms-quorumclient       3/3     41m
        dev-aaf-aaf-sms-vault              1/1     41m
        dev-cassandra-cassandra            3/3     41m
        dev-consul-consul-server           3/3     29m
        dev-dmaap-dbc-pg                   2/2     39m
        dev-dmaap-dmaap-dr-db              2/2     39m
        dev-dmaap-dmaap-dr-node            1/1     39m
        dev-dmaap-message-router           1/1     39m
        dev-dmaap-message-router-kafka     3/3     39m
        dev-dmaap-message-router-zookeeper   3/3     39m
        dev-mariadb-galera-mariadb-galera    3/3     40m
        dev-multicloud-multicloud-k8s-etcd   1/1     26m
        dev-multicloud-multicloud-k8s-mongo  1/1     26m
        dev-sdnc-nengdb                    1/1     23m
        dev-sdnc-sdnc                    3/3     23m
        dev-vid-vid-mariadb-galera         1/1     21m

$ kubectl -n onap get jobs.batch
        NAME                          COMPLETIONS   DURATION   AGE
        dev-aaf-aaf-sms-preload             1/1         3m19s      41m
        dev-aaf-aaf-sshsm-distcenter          1/1         40s        41m
```

```
dev-aaf-aaf-sshsm-testca                1/1         56s       41m
dev-aai-aai-graphadmin-create-db-schema 1/1         109s      30m
dev-aai-aai-traversal-update-query-data 1/1         4m3s      30m
dev-portal-portal-db-config             1/1         8m11s     25m
dev-sdc-sdc-be-config-backend           1/1         17m       24m
dev-sdc-sdc-cs-config-cassandra         1/1         2m44s     24m
dev-sdc-sdc-dcae-be-tools               1/1         22m       24m
dev-sdc-sdc-es-config-elasticsearch     1/1         2m21s     24m
dev-sdc-sdc-onboarding-be-cassandra-init 1/1        2m49s     24m
dev-sdc-sdc-wfd-be-workflow-init        1/1         2m56s     24m
dev-sdnc-sdnc-dbinit-job                1/1         25s       23m
dev-so-so-mariadb-config-job            1/1         15s       22m
dev-vid-vid-galera-config               1/1         51s       21m

$ kubectl -n onap get pod
NAME                                    READY   STATUS             RESTARTS   AGE
dev-aaf-aaf-cass-85c487dfb5-9vqdn       1/1     Running            0          41m
dev-aaf-aaf-cm-796979df57-p8t8f         1/1     Running            0          41m
dev-aaf-aaf-fs-74b94d67fb-s6vrq         1/1     Running            0          41m
dev-aaf-aaf-gui-79f5584b44-82t7s        1/1     Running            0          41m
dev-aaf-aaf-locate-7d6b56ff64-7g55p     1/1     Running            0          41m
dev-aaf-aaf-oauth-78cd4f9cd9-sz9vz      1/1     Running            0          41m
dev-aaf-aaf-service-5cf9c4fdf4-lsv6w    1/1     Running            0          41m
dev-aaf-aaf-sms-7855754576-2r5pb        1/1     Running            0          41m
dev-aaf-aaf-sms-preload-b2hrn           0/1     Completed          0          41m
dev-aaf-aaf-sms-quorumclient-0          1/1     Running            0          41m
dev-aaf-aaf-sms-quorumclient-1          1/1     Running            0          41m
dev-aaf-aaf-sms-quorumclient-2          1/1     Running            0          41m
dev-aaf-aaf-sms-vault-0                 2/2     Running            1          41m
dev-aaf-aaf-sshsm-distcenter-jbwqs      0/1     Completed          0          41m
dev-aaf-aaf-sshsm-testca-6qgx4          0/1     Completed          0          41m
dev-aai-aai-7744d85957-qwhwd            1/1     Running            0          30m
dev-aai-aai-babel-5cb45654f4-5vwqj      2/2     Running            0          30m
dev-aai-aai-data-router-b98c775c6-cqsbv 2/2     Running            0          30m
dev-aai-aai-elasticsearch-5cb6b5f588-tcscq 1/1  Running            0          30m
dev-aai-aai-graphadmin-5597fc59b8-s28lv 2/2     Running            0          30m
dev-aai-aai-graphadmin-create-db-schema-8fq9c 0/1 Completed        0          30m
dev-aai-aai-graphgraph-67fdb7db7f-p8sxf 0/1     ImagePullBackOff   0          30m
dev-aai-aai-modelloader-77bb578995-l5zrt 2/2    Running            0          30m
dev-aai-aai-resources-6879867dc4-dc84h  2/2     Running            0          30m
dev-aai-aai-schema-service-66499c6fd9-ltl8z 2/2 Running            0          30m
dev-aai-aai-search-data-7d78b7bffd-bf4pb 2/2    Running            0          30m
dev-aai-aai-sparky-be-94f6b77d6-qjznm   2/2     Running            0          30m
dev-aai-aai-traversal-6d75c9c9f5-qk5ff  2/2     Running            0          30m
dev-aai-aai-traversal-update-query-data-t6d8b 0/1 Completed        0          30m
dev-cassandra-cassandra-0               1/1     Running            0          41m
dev-cassandra-cassandra-1               1/1     Running            0          37m
dev-cassandra-cassandra-2               1/1     Running            0          35m
```

```
dev-consul-consul-9bfcd7669-qxldh                  1/1     Running     0          29m
dev-consul-consul-server-0                         1/1     Running     0          29m
dev-consul-consul-server-1                         1/1     Running     0          28m
dev-consul-consul-server-2                         1/1     Running     0          28m
dev-dmaap-dbc-pg-0                                 1/1     Running     0          39m
dev-dmaap-dbc-pg-1                                 1/1     Running     0          39m
dev-dmaap-dbc-pgpool-857685c9bd-lfv5r              1/1     Running     0          39m
dev-dmaap-dbc-pgpool-857685c9bd-mmzsl              1/1     Running     0          39m
dev-dmaap-dmaap-bc-56f7b66ff9-sgpvx                1/1     Running     0          39m
dev-dmaap-dmaap-dr-db-0                            1/1     Running     0          39m
dev-dmaap-dmaap-dr-db-1                            1/1     Running     0          38m
dev-dmaap-dmaap-dr-node-0                          2/2     Running     0          39m
dev-dmaap-dmaap-dr-prov-69746cf966-2kwb7           2/2     Running     0          39m
dev-dmaap-message-router-0                         1/1     Running     0          39m
dev-dmaap-message-router-kafka-0                   1/1     Running     0          39m
dev-dmaap-message-router-kafka-1                   1/1     Running     0          39m
dev-dmaap-message-router-kafka-2                   1/1     Running     0          39m
dev-dmaap-message-router-mirrormaker-6cc59dd8cd-9gglb   1/1     Running     0          39m
dev-dmaap-message-router-zookeeper-0               1/1     Running     0          39m
dev-dmaap-message-router-zookeeper-1               1/1     Running     0          39m
dev-dmaap-message-router-zookeeper-2               1/1     Running     0          39m
dev-mariadb-galera-mariadb-galera-0                1/1     Running     0          40m
dev-mariadb-galera-mariadb-galera-1                1/1     Running     0          39m
dev-mariadb-galera-mariadb-galera-2                1/1     Running     0          38m
dev-msb-kube2msb-86cdf8db6c-z5wkm                  1/1     Running     0          27m
dev-msb-msb-consul-fc98d9574-9d2hd                 1/1     Running     0          27m
dev-msb-msb-discovery-6bf79d47dd-gpqtk             2/2     Running     0          27m
dev-msb-msb-eag-8596f7b584-pgmq7                   2/2     Running     0          27m
dev-msb-msb-iag-75774ff4bf-mfn6x                   2/2     Running     0          27m
dev-multicloud-multicloud-6bd7767884-ljkb6         2/2     Running     0          26m
dev-multicloud-multicloud-azure-7bd74b7697-tpzhs   2/2     Running     0          26m
dev-multicloud-multicloud-fcaps-596b58945-7sj8t    3/3     Running     0          26m
dev-multicloud-multicloud-k8s-6dc84c5679-h2h2f     2/2     Running     2          26m
dev-multicloud-multicloud-k8s-etcd-0               1/1     Running     0          26m
dev-multicloud-multicloud-k8s-mongo-0              1/1     Running     0          26m
dev-multicloud-multicloud-lenovo-6dfb58c96c-qj228  2/2     Running     0          26m
dev-multicloud-multicloud-pike-77b578cf96-ld2tw    2/2     Running     0          26m
dev-multicloud-multicloud-starlingx-77fb6984b-x6xbw  3/3     Running     0          26m
dev-multicloud-multicloud-vio-68f89576bb-c6cvw     2/2     Running     0          26m
dev-multicloud-multicloud-windriver-7f886b8787-shjqt  3/3     Running     0          26m
dev-portal-portal-app-7778b4c6c4-7mkhp             2/2     Running     0          25m
dev-portal-portal-cassandra-7949bff6f6-kp7ph       1/1     Running     0          25m
dev-portal-portal-db-5bb5dbf8dc-n2nzh              1/1     Running     0          25m
dev-portal-portal-db-config-lqn9h                  0/2     Completed   0          25m
dev-portal-portal-sdk-7fb88c57c-pbz88              2/2     Running     0          25m
dev-portal-portal-widget-7c944bf9b-2mwtw           1/1     Running     0          25m
dev-portal-portal-zookeeper-bf44d644f-d76jh        1/1     Running     0          25m
dev-robot-robot-65cd75cc96-r9xqc                   1/1     Running     0          24m
```

```
dev-sdc-sdc-be-855ff6b44-jz5wh                    2/2     Running     0          24m
dev-sdc-sdc-be-config-backend-9b5gd               0/1     Completed   0          24m
dev-sdc-sdc-cs-config-cassandra-nvhj7             0/1     Completed   0          24m
dev-sdc-sdc-dcae-be-5744545b65-wb5lw              2/2     Running     0          24m
dev-sdc-sdc-dcae-be-tools-pjrlc                   0/1     Completed   0          3m52s
dev-sdc-sdc-dcae-dt-689997dfd6-bg62s              2/2     Running     0          24m
dev-sdc-sdc-dcae-fe-5488765bbf-tb6kk              2/2     Running     0          24m
dev-sdc-sdc-dcae-tosca-lab-7b4b46dc67-wcj22       2/2     Running     0          24m
dev-sdc-sdc-es-5c9788797-2wtw8                    1/1     Running     0          24m
dev-sdc-sdc-es-config-elasticsearch-ggpvv         0/1     Completed   0          24m
dev-sdc-sdc-fe-68964747d5-zwxsn                   2/2     Running     0          24m
dev-sdc-sdc-kb-655f754957-cwkg8                   1/1     Running     0          24m
dev-sdc-sdc-onboarding-be-7656998885-kgbgs        2/2     Running     0          24m
dev-sdc-sdc-onboarding-be-cassandra-init-jrg9h    0/1     Completed   0          24m
dev-sdc-sdc-wfd-be-5884945bbb-q6wxh               1/1     Running     0          24m
dev-sdc-sdc-wfd-be-workflow-init-bvz4g            0/1     Completed   0          24m
dev-sdc-sdc-wfd-fe-6b85c4d87f-5npqq               2/2     Running     0          24m
dev-sdnc-nengdb-0                                 1/1     Running     0          23m
dev-sdnc-network-name-gen-7cf8b96dc4-ckmvw        1/1     Running     0          23m
dev-sdnc-sdnc-0                                   2/2     Running     0          23m
dev-sdnc-sdnc-1                                   2/2     Running     0          23m
dev-sdnc-sdnc-2                                   2/2     Running     0          23m
dev-sdnc-sdnc-ansible-server-587d8ffdfb-zk6m6     1/1     Running     0          23m
dev-sdnc-sdnc-dbinit-job-6bft2                    0/1     Completed   0          23m
dev-sdnc-sdnc-dgbuilder-846dc6856-76cvb           1/1     Running     0          23m
dev-sdnc-sdnc-dmaap-listener-6bbc5bbd84-lbs66     1/1     Running     0          23m
dev-sdnc-sdnc-ueb-listener-6bd57b7f8-hqnnd        1/1     Running     3          23m
dev-so-so-58b5bd7f6-dctxd                         1/1     Running     0          22m
dev-so-so-bpmn-infra-58c79778f6-g85bw             1/1     Running     0          22m
dev-so-so-catalog-db-adapter-84d9d75df-ms82j      1/1     Running     0          22m
dev-so-so-mariadb-config-job-2vrt9                0/1     Completed   0          22m
dev-so-so-monitoring-549567c8fd-m7jrz             1/1     Running     0          22m
dev-so-so-openstack-adapter-6b9f76cf45-gvrf8      1/1     Running     0          22m
dev-so-so-request-db-adapter-7898f95f4f-22ksx     1/1     Running     0          22m
dev-so-so-sdc-controller-5b69c5fbdf-ffwln         1/1     Running     0          22m
dev-so-so-sdnc-adapter-76464f9cf4-96z6s           1/1     Running     0          22m
dev-so-so-vfc-adapter-cf9854c5b-26xq9             1/1     Running     0          22m
dev-so-so-vnfm-adapter-6ff57c9b9-q94fb            1/1     Running     0          22m
dev-vid-vid-757cb484f5-bxp68                      2/2     Running     0          21m
dev-vid-vid-galera-config-vrjsx                   0/1     Completed   0          21m
dev-vid-vid-mariadb-galera-0                      1/1     Running     0          21m

$ kubectl -n onap get pvc
NAME                                                STATUS   VOLUME                                     CAPACITY
ACCESS MODES   STORAGECLASS   AGE
cassandra-data-dev-cassandra-cassandra-0            Bound    pvc-14f03b91-57fc-
41d1-952f-ac1e56612fe7   2Gi        RWO            general        41m
```

cassandra-data-dev-cassandra-cassandra-1 Bound pvc-384b7492-1fbe-4c3b-a7d7-8742e0b84abc 2Gi RWO general 38m
cassandra-data-dev-cassandra-cassandra-2 Bound pvc-4784401a-ca30-4ca7-9c16-12efdc885383 2Gi RWO general 35m
dev-aaf-aaf-cass-pvc Bound pvc-8ff2b9a7-82d2-41be-9b87-5c1df1e4175e 20Gi RWO general 41m
dev-aaf-aaf-config-pvc Bound pvc-985a9d65-1b42-41ac-bc4d-41fd1ca6feeb 2Gi RWX nfs 41m
dev-aaf-aaf-hello-pvc Bound dev-aaf-aaf-hello-pv 40M RWX nfs 41m
dev-aaf-aaf-sms Bound pvc-3d475666-6218-4922-84c7-1df24538941a 1Gi RWO general 41m
dev-aaf-aaf-sms-quorumclient Bound pvc-c027d313-f829-467c-bd76-90ff3f7ac8d0 10Mi RWX nfs 41m
dev-aaf-aaf-sms-vault Bound pvc-fc830bd3-92fc-433e-baae-fc7f9a198079 2Gi RWO general 41m
dev-aaf-aaf-sshsm-data Bound pvc-c3a4d829-7dde-4386-9535-803a55a81a37 10Mi RWO general 41m
dev-aaf-aaf-sshsm-dbus Bound pvc-bd829e56-ee80-421c-9792-e65afd7a7f61 10Mi RWO general 41m
dev-aaf-aaf-sshsm-distcenter Bound pvc-bec97275-d4af-4b19-8b56-e70b4e5006a6 10Mi RWX nfs 41m
dev-aaf-aaf-status-pvc Bound pvc-23a07d9f-0195-47b7-af68-d62d55769eee 2M RWX nfs 41m
dev-dmaap-dbc-pg-data-dev-dmaap-dbc-pg-0 Bound pvc-199d62d7-6902-45b6-9087-ae01d55e13cd 1Gi RWO nfs 39m
dev-dmaap-dbc-pg-data-dev-dmaap-dbc-pg-1 Bound pvc-637a50dc-69f1-4c6a-b81f-0754ff8eced3 1Gi RWO nfs 39m
dev-dmaap-dmaap-dr-db Bound pvc-bbbd729d-ee79-4ddc-9e07-badc553464df 1Gi RWO general 39m
dev-dmaap-dmaap-dr-db-data-dev-dmaap-dmaap-dr-db-0 Bound pvc-ef35fd56-a1ae-48d5-a5f6-b8f723557011 1Gi RWO general 39m
dev-dmaap-dmaap-dr-db-data-dev-dmaap-dmaap-dr-db-1 Bound pvc-8b25dd54-3a7f-4216-91d4-96986d2a9246 1Gi RWO general 38m
dev-dmaap-dmaap-dr-node-event-logs-pvc-dev-dmaap-dmaap-dr-node-0 Bound pvc-3f108efa-37c6-4d17-ab49-991651528aab 1Gi RWO general 39m
dev-dmaap-dmaap-dr-node-spool-data-pvc-dev-dmaap-dmaap-dr-node-0 Bound pvc-da3b7074-e8b8-49cf-b935-8e2fad7d7d4b 1Gi RWO general 39m
dev-mariadb-galera-mariadb-galera Bound pvc-6c930af8-26e8-434c-8569-9cbe6541b45b 2Gi RWO general 40m
dev-mariadb-galera-mariadb-galera-data-dev-mariadb-galera-mariadb-galera-0 Bound pvc-b6381754-d614-4a0c-a5c5-91927632b1f6 2Gi RWO general 40m
dev-mariadb-galera-mariadb-galera-data-dev-mariadb-galera-mariadb-galera-1 Bound pvc-f6930394-d56a-44a3-9f04-34ac7821b068 2Gi RWO general 39m
dev-mariadb-galera-mariadb-galera-data-dev-mariadb-galera-mariadb-galera-2 Bound pvc-c0022aed-e374-4ec8-a13d-ce487a6d8a96 2Gi RWO general 38m
dev-multicloud-multicloud-k8s-etcd-data-dev-multicloud-multicloud-k8s-etcd-0 Bound pvc-da164d94-1f38-4610-84b5-6e504aad6bc9 1Gi RWO general 26m

dev-multicloud-multicloud-k8s-mongo-data Bound pvc-5650aea3-643a-4dc5-9c32-77b319154997 1Gi RWO general 26m
dev-multicloud-multicloud-windriver Bound pvc-2fc129d6-129f-4b4e-8bb1-6f38c53fa425 5Gi RWO general 26m
dev-portal-portal-cassandra Bound pvc-3544fb81-7ad4-4441-b940-2bf388cba448 2Gi RWO general 25m
dev-portal-portal-db Bound pvc-5634d597-dd46-48d6-9e65-c26b8b975eaa 2Gi RWO general 25m
dev-robot-robot Bound pvc-a7eff314-abd6-4caf-b760-782486cae333 2Gi RWX nfs 25m
dev-sdc-sdc-es Bound pvc-5a7554bd-7ce2-4f41-b99c-e2cb42c55ccd 2Gi RWO general 24m
dev-sdc-sdc-onboarding-be-cert Bound pvc-9400daf5-5d19-4216-9ca9-73be724bcfac 10Mi ROX general 24m
dev-sdnc-nengdb Bound pvc-c28b2ff2-8b30-4fd2-85b9-9603bfa56fb4 2Gi RWO general 23m
dev-sdnc-nengdb-data-dev-sdnc-nengdb-0 Bound pvc-5593360e-a862-4ace-ab18-c5ebfbe7d8c6 2Gi RWO general 23m
dev-sdnc-sdnc-mdsal-dev-sdnc-sdnc-0 Bound pvc-7e04d9ad-a47d-4772-80bc-795af24ad88c 1Gi RWO nfs 23m
dev-sdnc-sdnc-mdsal-dev-sdnc-sdnc-1 Bound pvc-121b2cb7-7b04-4aee-a57a-58aeeed359f3 1Gi RWO nfs 23m
dev-sdnc-sdnc-mdsal-dev-sdnc-sdnc-2 Bound pvc-cd35b783-0ec5-4a3b-9504-7abe0fea74a1 1Gi RWO nfs 23m
dev-sdnc-sdnc-pvc-certs Bound pvc-c26ca8d3-eba4-40a7-b025-31ede7a95751 50Mi RWX nfs 23m
kafka-data-dev-dmaap-message-router-kafka-0 Bound pvc-5c8a5d7b-fceb-47eb-ad06-087c2d55b351 2Gi RWO nfs 39m
kafka-data-dev-dmaap-message-router-kafka-1 Bound pvc-13d14c61-e000-4e4d-a5ef-b5a5e674e2f2 2Gi RWO nfs 39m
kafka-data-dev-dmaap-message-router-kafka-2 Bound pvc-04b36e03-de9e-4b5c-a255-b5fdd3d4f638 2Gi RWO nfs 39m
zookeeper-data-dev-dmaap-message-router-zookeeper-0 Bound pvc-e81f3e06-3d49-49bb-a45f-5cf34a5c8253 2Gi RWO general 39m
zookeeper-data-dev-dmaap-message-router-zookeeper-1 Bound pvc-dc529ac4-9625-4c65-8abe-979c6020b504 2Gi RWO general 39m
zookeeper-data-dev-dmaap-message-router-zookeeper-2 Bound pvc-dd482df9-8087-4d57-af8f-6607d6dcc86f 2Gi RWO general 39m

Debug Tips

Tip 1: Tear down ONAP instance:

helm list |grep dev
helm del --purge dev-aaf dev-aai dev-cassandra dev-consul dev-dmaap dev-msb dev-multicloud dev-portal dev-robot dev-sdc dev-sdnc dev-so dev-vid dev-mariadb-galera dev

kubectl -n onap get jobs.batch | cut -d ' ' -f1 | xargs kubectl delete jobs.batch

kubectl -n onap get pvc | cut -d ' ' -f1 | xargs kubectl delete pvc

Tip 2: Postman collections

Postman imports following collection and environment to postman:
https://github.com/biny993/oom/tree/elalto-starlingx3/postman

Postman Requests	Intention	Involved Environment Variables
0,Get Example Cloud-Regions	Validate the postman connection to ONAP AAI service	ONAP_SERVICE_IP must be set with K8S IP for accessing ONAP services
1,declare Owning-Entity in AAI	Declare Owning entity	
2,Declare platform	Declare platform	
3,Declare lineOfBusiness	Declare line of business	
4,Declare project	Declare project	
5, Create a Complex	Create a Complex to AAI	CLOUD_COMPLEX must be set appropriately
6, Create a Cloud-Region	Create a Cloud Region to AAI	CLOUD_OWNER, CLOUD_REGIONID, K8S_APISERVER, K8S_APITOKEN, OS_REGION_ID, OS_AUTH_URL, OS_USERNAME, OS_PASSWORDOS_PROJECT_NAME must be set appropriately
7, Register To Multicloud	Trigger MultiCloud Registration process for a Cloud Region	
8, Get a k8s connectivity-info	Check if k8s endpoint is registered to multicloud-k8s service	
9, Create a Customer	Create a subscription customer	global-customer-id must be set appropriately
10, Create service type	Create service type	global-service-type must be set appropriately
11, Put a Customer subscription	Create customer subscription	
12, Put a Customer subscription relationship	Associate customer with subscription	

13, preload for VFmodule	Preload VNF topology to SDNC	gvnf_instance_name, gvnf_model_name, service_instance_uuid, vfmodule_instance_name, vfmodule_model_name must be set appropriately