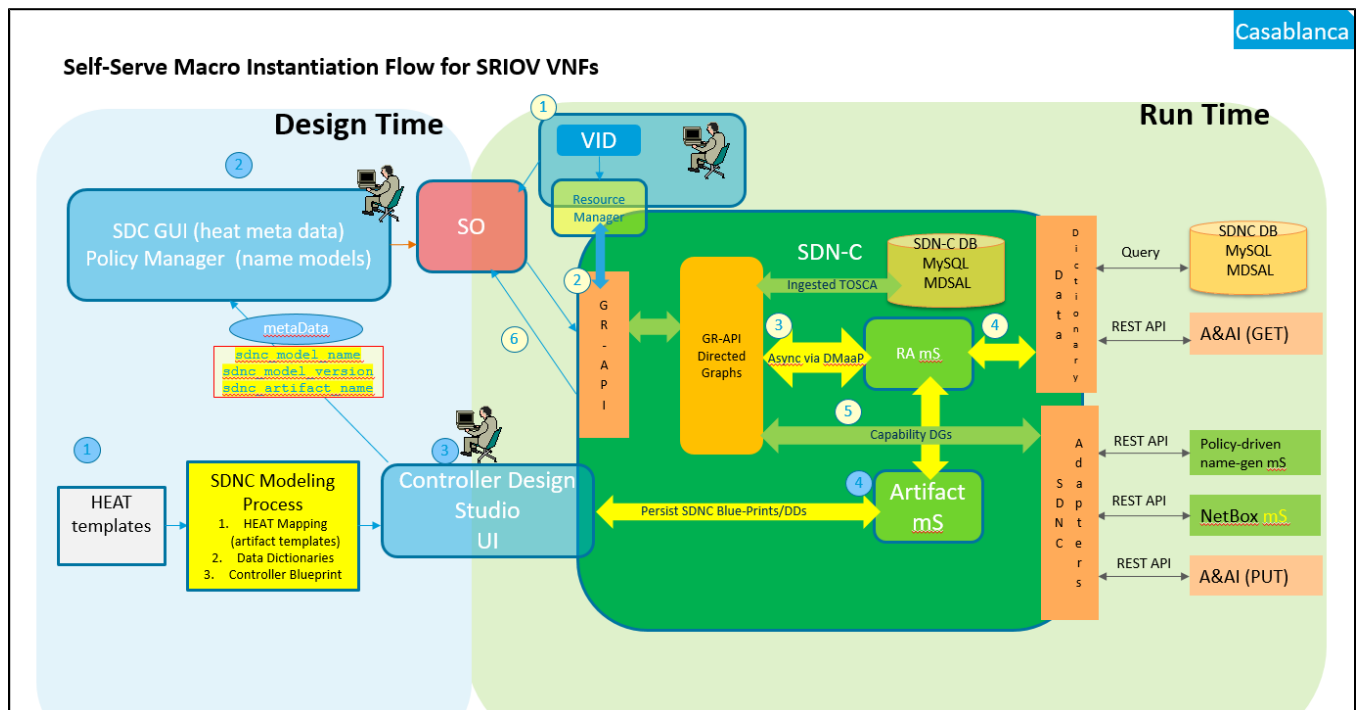


Instantiation - SDN-C Generic Resource API (Enhancement)



Swimming Diagram for instantiation.bdf.pptx



SDNC Modeling Process (via Controller Design Studio UI).

1. **Heat Mapping:** Start by the HEAT environment file as final product required for Openstack spin up. Then for each cloud parameter we define the following:
 - a. Cloud parameters assignment type (Default, Input, Capability)
 - b. Resources ruleset (Assignment logic : Recipe, ingredients, Model-driven vs Custom logic)

c. Assignment Capabilities: (microServices, DG-Capability logic, Policy models...

2. **Data Dictionaries:** Define the SDNC model used to resolve resource values from various systems.

- Define source type (default. Input, DB, A&AI, mS...etc)
- Define model used to retrieve the resource value from the various sub-systems (input-key-mapping, output-key-mapping, url, path)
Define DD's name, type, complex data type (if sub-system supports a list of complex data structure)

3. **Controller Blueprint:** Create SDNC model and all associated capabilities, artifact templates, Data Dictionaries

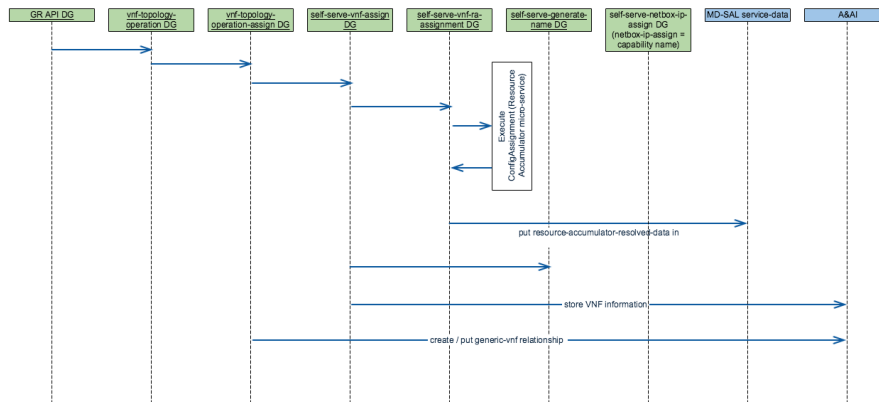
- model Identifier: (model name, version, author...etc)
- Capabilities (Resource-Assignment, Artifact-template)
- Template Instance (Upload Artifact Templates)
 - Edit/View each Artifact Template
 - Upload Artifact Template JSON file
 - Load template and Auto-Map to Data Dictionaries
 - Review Mapping Table and Edit DDs, Default values, DD Source

Execution - Runtime process (via VID to SO to SDNC)

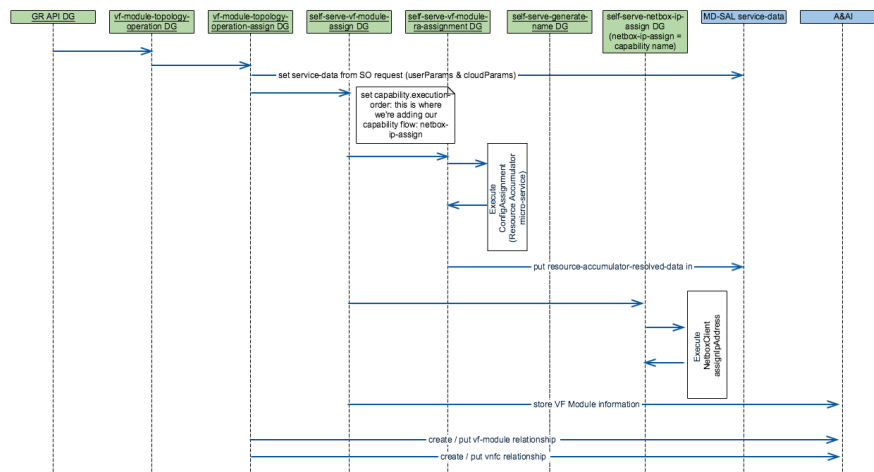
5. Capability DGs execution flow

Logic for vnf and vf-module assignement is pretty much the same. The main difference is, vnf assignment will take care of calling the naming microservice if specified in the controller blueprint artifact.

This is the general logic of the VNF assign flow and sub-flows:



This is the general logic of the vf-module assign flow and sub-flows:



https://github.com/onap/demo/blob/master/heat/vFW/base_vfw.yaml

The work bellow is based on the following git repository, providing netbox docker images: <https://github.com/ninech/netbox-docker>

The Netbox helm chart has been submitted in OOM, the code can be found here: <https://github.com/onap/oom/tree/master/kubernetes/contrib/charts/netbox>

This helm chart is comprised of three subcharts, being:

- netbox-app: provides the IPAM capability we're seeking for current selected use cases (vFW).
- netbox-nginx: reverse proxy exposing IPAM system in a secure fashion (using NodePort).
- netbox-postgress: backend database persisting the Netbox data. Currently a deployment, should be converted to statefull set using StorageClass.

Regarding the netbox-app, this charts come with possibility for customization. The folder tree structure is the following:

```
.
??? config
    ??? configuration                                Those are configuration scripts coming from Netbox itself,
they remained un-touched.
    ?   ??? configuration.py
    ?   ??? gunicorn_config.py
    ?   ??? ldap_config.py
    ??? initializers                                Those YAML files are where we can added so pre-provisioning
data, such as user or custom fields.
    ?   ??? custom_fields.yml
    ?   ??? groups.yml
    ?   ??? users.yml
    ??? provisioning                                This defines the entrypoint of netbox-app deployment, that
will provision prefix to support vFW use case.
    ?   ??? provision.sh
    ??? startup_scripts                            Those scripts are provided by Netbox itself, they
remained un-touched.
    ??? 00_users.py
    ??? 10_groups.py
    ??? 20_custom_fields.py
```

In order to test Netbox locally using this helm chart, here are the steps to follow:

```
git clone https://gerrit.onap.org/r/oom
cd oom/kubernetes
helm serve &
make contrib
helm install local/contrib --name netbox --namespace $NAMESPACE
```

This will result in installing the 3 charts, and run the job that will provisioned Netbox for us.

Ouput of the helm install should look like the following:

```
$ helm install local/contrib --name netbox --namespace onap-adetalhouet
NAME: netbox

LAST DEPLOYED: Tue Aug 28 14:30:57 2018
NAMESPACE: onap-adetalhouet
STATUS: DEPLOYED

RESOURCES:
==> v1/ConfigMap
NAME                                DATA  AGE
netbox-netbox-app-configuration-configmap  3      1s
netbox-netbox-app-initializers-configmap  3      1s
netbox-netbox-app-startupscripts-configmap 3      1s
netbox-netbox-app-provisioning-configmap  1      1s
netbox-netbox-nginx-config-configmap      1      1s
netbox-netbox-postgres-docker-entry-initd 0      1s

==> v1/PersistentVolumeClaim
NAME                                STATUS  VOLUME                                     CAPACITY  ACCESS MODES
STORAGECLASS  AGE
netbox-netbox-static    Pending  nfs-dev-sc                                1s
netbox-netbox-postgres  Bound   pvc-8193e062-aaf0-11e8-beaa-f40343575464 1Gi  RWX  nfs-dev-sc  1s

==> v1/Service
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
netbox-app	ClusterIP	10.43.179.246	<none>	8001/TCP	1s
netbox-nginx	NodePort	10.43.136.76	<none>	8080:30269/TCP	1s
netbox-postgres	ClusterIP	10.43.64.155	<none>	5432/TCP	1s

==> v1beta1/Deployment

NAME	DESIRED	CURRENT	UP-TO-DATE	AVAILABLE	AGE
netbox-netbox-app	1	1	1	0	1s
netbox-netbox-nginx	1	1	1	0	1s
netbox-netbox-postgres	1	1	1	0	1s

==> v1/Job

NAME	DESIRED	SUCCESSFUL	AGE
netbox-netbox-app-provisioning	1	0	1s

==> v1/Pod(related)

NAME	READY	STATUS	RESTARTS	AGE
netbox-netbox-app-f54cd84d5-g6xr2	0/1	Pending	0	1s
netbox-netbox-nginx-5d4f86ffcf-qlkhc	0/1	Pending	0	1s
netbox-netbox-postgres-76857df45-5jjm9	0/1	Pending	0	1s
netbox-netbox-app-provisioning-26stg	0/1	Pending	0	1s

==> v1/Secret

NAME	TYPE	DATA	AGE
netbox-netbox-app-pass	Opaque	6	1s

These are the tables to create:

Table	Columns									
ipam_ip_pool	ipam_serial_pool_id	create_date	prefix	pref_ix_ids	family(v4/v6)	prefix_status: Pending, Activate, Delete	description (vfw-protect, or vfw-unprotected)	region (RegionOne, RegionTwo)		
ipam_ip_assignment	ipam_serial_ip_assignment_id	create_date	service_instance_id	vf_module_id	ip_address	ip_address_type (vip, fixed, floating etc..)	prefix_id (string)	ip_address_id (string)	ip_status	ip_response

These are the tables we created:

```
mysql> show columns from IPAM_IP_ASSIGNMENT;
```

Field	Type	Null	Key	Default	Extra
ipam_ip_uuid	int(11)	NO	PRI	NULL	auto_increment
create_date	datetime	NO		CURRENT_TIMESTAMP	
service_instance_id	varchar(255)	YES		NULL	
vf_module_id	varchar(255)	YES		NULL	
external_key	varchar(255)	YES		NULL	
prefix_id	varchar(255)	YES		NULL	
ip_address_id	varchar(255)	YES		NULL	
ip_address	varchar(255)	YES		NULL	
ip_address_type	varchar(255)	YES		NULL	

```

| ip_status      | varchar(255) | YES | | NULL | |
| ip_response_json | varchar(255) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)mysql> show columns from IPAM_IP_POOL;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default      | Extra      |
+-----+-----+-----+-----+-----+-----+
| ipam_pool_uuid | int(11)   | NO   | PRI | NULL         | auto_increment |
| create_date   | datetime | NO   |     | CURRENT_TIMESTAMP |
| prefix_id     | int(2)    | YES  |     | NULL         |
| prefix        | varchar(255) | YES  |     | NULL         |
| address_family | int(1)    | YES  |     | NULL         |
| prefix_status | varchar(255) | YES  |     | NULL         |
| description   | varchar(255) | YES  |     | NULL         |
+-----+-----+-----+-----+-----+-----+

```

This is the pool being hardcoded in the pool table to support vFW use case

```

mysql> select * from IPAM_IP_POOL;
+-----+-----+-----+-----+-----+-----+-----+
| ipam_pool_uuid | create_date      | prefix_id | prefix      | address_family | prefix_status | description |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 2018-08-17 20:15:12 | 3 | 10.0.0.0/8 | 4 | ACTIVE | private |
| 2 | 2018-08-17 20:19:29 | 2 | 192.168.10.0/24 | 4 | ACTIVE | unprotected |
| 3 | 2018-08-17 20:20:08 | 1 | 192.168.20.0/24 | 4 | ACTIVE | protected |
+-----+-----+-----+-----+-----+-----+-----+

```

Three main things are achieved during pre-provisioning:

- Create an admin onap user, as follow. This is part of the netbox-app chart resources file: config/initializers/users.yml.

```

onap:
  first_name: Steve
  last_name: McQueen
  email: steve.mcqueen@onap.org
  password: onap123$
  api_token: onceuponatimeiplayedwithnetbox20180814
  is_staff: true # whether user is admin or not, default = false
  is_active: true # whether user is active, default = true
  is_superuser: true # Whether user has all edit rights or not, default = false

```

- Create an custom_fields being client_key in order to uniquely identify the resource with a key generated by ONAP. This is part of the netbox-app chart resources file: config/initializers/custom_fields.yml.

```

external-key:
  description: "The external-key uniquely identify the resources to a service within ONAP."
  filterable: true
  label: ONAP external key
  on_objects:
    - ipam.models.IPAddress
  required: true
  type: text
  weight: 0
resource-name:
  description: "The resource-name of the element using this IP."
  filterable: true

```

```
label: ONAP resource name
on_objects:
  - ipam.models.IPAddress
required: true
type: text
weight: 0
```

- The following script creating the prefixes and some objects within Netbox:

```
#!/bin/bash

# Create region

echo "Create region: RegionOne"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/dcim/regions/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "name": "RegionOne",
    "slug": "RegionOne"
  }'

# Create tenant group

echo "Create tenant group: ONAP group"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/tenancy/tenant-groups/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "name": "ONAP group",
    "slug": "onap-group"
  }'

# Create tenant

echo "Create tenant ONAP in ONAP group"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/tenancy/tenants/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "name": "ONAP",
    "slug": "onap",
    "group": 1,
    "description": "ONAP tenant",
    "comments": "Tenant for ONAP demo use cases"
  }'

# Create site

echo "Create ONAP demo site: Montreal Lab"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/dcim/sites/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "name": "Montreal Lab D3",
    "slug": "mtl-lab-d3",
    "region": 1,
    "tenant": 1,
    "facility": "Campus",
    "time_zone": "Canada/Atlantic",
    "description": "Site hosting the ONAP use cases",
    "physical_address": "1 Graham Bell",
    "shipping_address": "1 Graham Bell",
    "contact_name": "Alexis",
    "contact_phone": "0000000000",
    "contact_email": "adetalhouet89@gmail.com",
```

```

    "comments": "ONAP lab"
  }'

# Create prefixes

echo "Create Prefix for vFW protected network"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/ipam/prefixes/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "prefix": "192.168.20.0/24",
    "site": 1,
    "tenant": 1,
    "is_pool": true,
    "description": "IP Pool for protected network - vFW use case"
  }'

echo "Create Prefix for vFW unprotected network"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/ipam/prefixes/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "prefix": "192.168.10.0/24",
    "site": 1,
    "tenant": 1,
    "is_pool": true,
    "description": "IP Pool for unprotected network - vFW use case"
  }'

echo "Create Prefix for ONAP general purpose network"
curl --silent -X POST \
  http://{{ .Values.service.name }}:{{ .Values.service.internalPort }}/api/ipam/prefixes/ \
  -H 'Authorization: Token onceuponatimeplayedwithnetbox20180814' \
  -H 'Content-Type: application/json' \
  -d '{
    "prefix": "10.0.0.0/8",
    "site": 1,
    "tenant": 1,
    "is_pool": true,
    "description": "IP Pool for ONAP - general purpose"
  }'

```

Work items required to add a new capability:

If there is any database needed for the plugin, create them in sdnc/oam:

sdnc/oam:

- add a dump of the tables + static data if any in sdnc-oam/installation/sdnc/src/main/resources with the file name being \${SOMETHING}.data.dump.

example: <https://gerrit.onap.org/r/#/c/61137/>

- add the DG flow for the operation you're implementing. The DG should be named 'self-serve-\$CAPABILITY_NAME', e.g. self-serve-netbox-ip-assign

The code to interact with the external system has to be done in the ccSDK/sli/adaptors:

ccSDK/sli/apdaptors:

- create a new plugin composed of features/installer/provider. example: <https://github.com/onap/ccsdk-sli-adaptors/tree/master/netbox-client>
- add the module in the root pom.xml file. example: <https://github.com/onap/ccsdk-sli-adaptors/blob/master/pom.xml#L114>
- add the plugin feature into ccSDK/sli/apdaptors/features/ccsdk-sli-adaptors-all/pom.xml. example: <https://github.com/onap/ccsdk-sli-adaptors/blob/master/features/ccsdk-sli-adaptors-all/pom.xml#L61-L67>
- the interface you will create in the provider has to extend org.onap.ccsdk.sli.core.sli.SvcLogicJavaPlugin. example: <https://github.com/onap/ccsdk-sli-adaptors/blob/master/netbox-client/provider/src/main/java/org/onap/ccsdk/sli/adaptors/netbox/api/NetboxClient.java#L27>
- the functions defined in your interfaces: example: <https://github.com/onap/ccsdk-sli-adaptors/blob/master/netbox-client/provider/src/main/java/org/onap/ccsdk/sli/adaptors/netbox/api/NetboxClient.java#L32-L42>
- can have up to two parameters, a Map<String,String> passing all the input parameters, and the org.onap.ccsdk.sli.core.sli.SvcLogicContext being the DG context
- have to return org.onap.ccsdk.sli.core.sli.SvcLogicResource.QueryStatus as this is the standard output for 'execute' block of DG

In order to of the plugin has to be added to odlSli to it's landing in the SDNC image down the CI:

ccSDK/distribution:

- add the *.repo artifact in ccSDK/distribution/odlsli/pom.xml. example: <https://github.com/onap/ccsdk-distribution/blob/master/odlsli/pom.xml#L122-L128>

Overview

The generic-resource-api is used to assign cloud parameter assignment during instantiation flow. The vf-module instantiation flow begins with the main DG, self-serve-vfmodule-assign, when the svc-action = assign in the rpc request.

The main DG will call a series of sub-DGs according to the execution order of all the predefined capability components, such as generate-name, vlan-tag-assignment, eipam-ip-assignment, etc.

For IP assignment, the main DG calls the sub-DG, self-serve-eipam-ip-assignment to start the ip assignment process.

This wiki serves as the blueprint for capability integration with generic-resource-api for ip assignments, and it is used to integrate EIPAM custom plugin to obtain ip address assignments during vf-module orchestration.

Prerequisite

The following parameters must be set in context memory prior to the self-serve-eipam-ip-assignment sub-DG is called.

- ss.capability-name
 - value that matches the capability DG name; i.e. self-serve-eipam-ip-assignment
- ss.capability-action
 - assign
- vnf-index
 - The array index of the vnf that owns this vf-module in config tree
- vf-module-index
 - The array index of this vf-module in config tree
- service-data.vnfs.vnf[\$vnf-index].vnf-data.vf-modules.vf-module[\$vf-module-index].vf-module-data.vf-module-topology.vf-module-parameters.param[].

Logic

1. Unresolved Parameter Resolution

- Calls self-serve-capability-param-resolution DG to resolve all the unresolved values in vf-module-parameters.param[].resource-resolution-data.resource-key[].value where resource-resolution-data.capability-name matches this DG name.

2. Call EIPAM Plugin

- The EIPAM plugin returns the ip assignment in a context variable, called eipam-ip-block
- eipam-ip-block.plans[].requests[].ip-prefix
- eipam-ip-block.plans[].requests[].ip-prefix-length
- eipam-ip-block.plans[].requests[].ReservedAssignments[0].ReservedAssignment[3].ReservedKeyIPAddress
- Insert an entry to EIPAM_IP_ASSIGNMENTS table

3. Set Heat Parameters

The sub-DG, self-serve-vfmodule-assign will set value of then heat parameters based on the EIPAM

- vmxvre_oam_ip_0 = eipam-ip-block.plans[].requests[].ip-prefix
- vmxvre_oam_ip_prefix_0 = eipam-ip-block.plans[].requests[].ip-prefix-length
- vmxvre_oam_gateway = eipam-ip-block.plans[].requests[].ReservedAssignments[0].ReservedAssignment[3].ReservedKeyIPAddress

4. Netbox API call

Verb	URI	JSON payload (Bare minimal)	Params	Type	Comments	JSON response	Note
POST	/api/ipam/prefixes/{prefix-id}/available-ips/	{ "custom_fields": { "external-key": "test", "resource-name": "cloudParamName"	prefix-id	Integer	The ID of the prefix from	{ "id": 4,	Loop function within the

		<pre>} }</pre>			which to retrieve next available IP	<pre>"address": "192.168.10.2 /32", "vrf": null, "tenant": null, "status": 1, "role": null, "interface": null, "description": "", "nat_inside": null, "custom_fields": { "external-key": "test", "resource-name": "cloudParamName" }, "created": "2018-08-30", "last_updated": "2018- 08-30T14:59:05.277820Z" }</pre>	SDNC for getting the next availabl e for each cloud param resource.
--	--	--------------------	--	--	--	---	--

5. Testing out the DG

To test the DG to resolve multiple IPs, that mock-up data can be used:

```
{  
  "input": {  
    "module-name": "GENERIC-RESOURCE-API",  
    "rpc-name": "self-serve-netbox-ip-assignment",  
    "mode": "sync",  
    "sli-parameter": [  
      {  
        "parameter-name": "ss.capability-name",  
        "string-value": "netbox-ip-assign"  
      },  
      {  
        "parameter-name": "ss.capability-action",  
        "string-value": "assign"  
      },  
      {  
        "parameter-name": "vnf-index",  
        "int-value": 0  
      },  
      {  
        "parameter-name": "vf-module-index",
```

```

    "int-value": 0
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param_length",
    "string-value": "2"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].name",
    "string-value": "unprotected_private_net_cidr"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.capability-name",
    "string-value": "netbox-ip-assign"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.status",
    "string-value": "PENDING"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key_length",
    "int-value": 4
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[0].name",
    "string-value": "service-instance-id"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[0].value",
    "string-value": "1234-56789-4321-98766"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[1].name",
    "string-value": "prefix-id"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[1].value",
    "string-value": "1"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[2].name",
    "string-value": "vf-module-id"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[2].value",
    "string-value": "9999-999999-9999-999999"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[3].name",
    "string-value": "external_key"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[3].value",
    "string-value": "david-the-boss-blah"
  },
  {
    "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].name",
    "string-value": "protected_private_net_cidr"
  }

```

```

    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.capability-name",
      "string-value": "netbox-ip-assign"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.status",
      "string-value": "PENDING"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key_length",
      "int-value": 4
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[0].name",
      "string-value": "service-instance-id"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[0].value",
      "string-value": "1234-56789-4321-98765"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[1].name",
      "string-value": "prefix-id"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[1].value",
      "string-value": "1"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[2].name",
      "string-value": "vf-module-id"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[2].value",
      "string-value": "9999-999999-9999-999999"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[3].name",
      "string-value": "external_key"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
      topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[3].value",
      "string-value": "david-the-boss-blah-2"
    }
  ]
}
}

```

6. Additional notes

Self Service flow, once the topology-operation run-time assign flow is forked to use the self-service flow, DG will trigger the self service execute node "configAssignmentNode" with the required input to get the resolved artifact template. DG then will persist the template in MDSAL and trigger the rest of capabilities according to execution order. Below is summary of flow. We can discuss the flow in more details on Monday's call.

vnf-topology-operation

```

- This is the top level DG that will handle the rpc from MSO and it will invoke other DGs based on svc-
action.

vnf-topology-operation-assign

- Called by vnf-topology-operation when svc-action=assign
- execute self-serve forking logic and invoke self-serve-vnf-assign DG

self-serve-vnf-assign

- Called by vnf-topology-operation-assign
- Set vnf-index
- Copy MSO request inputs to service-data
- Call self-serve-ra-assignment if vnf-parameters-data.param_length is not null
- When self-serve-ra-assignment returns success, loop thru VNF capability execution order to call each
capability DG by capability-name
- Each capability DG will call self-serve-capability-param-resolution to resolve all unresolved value in
resource-keys before calling its
- capability component.
- When ALL capability DG returns success, call self-serve-unresolved-composite-data DG.
- Call AAI Put to update AAI
- If ALL capability DG and AAI update are successful, persists service-data in MD-SAL and return SUCCESS
to MSO
- If Any capability DG returns failure, persists service-data in MD-SAL and return FAILED to MSO

self-serve-ra-assignment

- Called by self-serve-vnf-assign
- Generate input json string for configAssignmentNode
- Call ConfigAssignmentNode
- Parse ConfigAssignmentNode Response
- Copy RA response to param[]

self-service-capability-param-resolution

- Called by all Capability DGs
- Loop thru all resource-key[].value that contains "$"
- Resolve resource-key[].value by looping thru all param[].value
- Return failure if resource-key[].value cannot be resolved.

```

Overview

The generic-resource-api is used to unassign cloud parameters during the vf-module unassign flow. The vf-module unassign flow begins with the main DG, self-serve-vfmodule-unassign, when the svc-action = unassign in the rpc request.

The main DG will call a series of sub-DGs according to the execution order of all the predefined capability components, such as generate-name, vlan-tag-assignment, eipam-ip-assignment, etc to unassign cloud parameters. Upon successful unassignment, the main DG will clear the service-data data in MD-SAL

Prerequisites

The following parameters must be set in context memory prior to the self-serve-eipam-ip-assignment sub-DG is called.

- ss.capability-name
 - value that matches the capability DG name; i.e. self-serve-eipam-ip-assignment
- ss.capability-action
 - unassign
- vnf-index
 - The array index of the vnf that owns this vf-module in config tree
- vf-module-index
 - The array index of this vf-module in config tree

- service-data.vnfs.vnf[\$vnf-index].vnf-data.vf-modules.vf-module[\$vf-module-index].vf-module-data.vf-module-topology.vf-module-parameters.param[].

Logic

1. Set EIPAM_IP_ASSIGNMENTS status

- set EIPAM_IP_ASSIGNMENTS.status to PENDING_DELETE by service-instance-id and client-key

2. Call EIPAM Plugin unassignIp

- Calls EIPAM plugin unassignIp method to unassign ip from EIPAM

3. Set Heat Parameters status

- Set service-data ... vf-module-parameters.param[].resource-resolution-data.status to DELETED for the following params
 - vmxvre_oam_ip_0
 - vmxvre_oam_ip_prefix_0
 - vmxvre_oam_gateway

4. Netbox API call

Action	Verb	URI	JSON payload (Bare minimal)	Params	Type	Comments	JSON response	Note
Delete IP	DELETE	/api/ipam/ip-addresses/{ip-id}/	-	ip-id	Integer	The ID of the IP address to delete	-	done as part of the VF Module delete action.

5. Testing out the DG

To test the DG to release multiple IPs, that mock-up data can be used:

```
{
  "input": {
    "module-name": "GENERIC-RESOURCE-API",
    "rpc-name": "self-serve-netbox-ip-assignment",
    "mode": "sync",
    "sli-parameter": [
      {
        "parameter-name": "ss.capability-name",
        "string-value": "netbox-ip-assign"
      },
      {
        "parameter-name": "ss.capability-action",
        "string-value": "unassign"
      },
      {
        "parameter-name": "vnf-index",
        "int-value": 0
      },
      {
        "parameter-name": "vf-module-index",
        "int-value": 0
      }
    ]
  }
}
```

```

    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param_length",
      "string-value": "2"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.capability-name",
      "string-value": "netbox-ip-assign"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.status",
      "string-value": "PENDING"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key_length",
      "int-value": 2
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[0].name",
      "string-value": "service-instance-id"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[0].value",
      "string-value": "1234-56789-4321-98766"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[1].name",
      "string-value": "external_key"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[0].resource-resolution-data.resource-key[1].value",
      "string-value": "david-the-boss-blah"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.capability-name",
      "string-value": "netbox-ip-assign"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.status",
      "string-value": "PENDING"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.resource-key_length",
      "int-value": 2
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[0].name",
      "string-value": "service-instance-id"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[0].value",
      "string-value": "1234-56789-4321-98765"
    },
    {
      "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[1].name",
      "string-value": "external_key"
    },
    {

```

```

        "parameter-name": "service-data.vnfs.vnf[0].vnf-data.vf-modules.vf-module[0].vf-module-data.vf-module-
topology.vf-module-parameters.param[1].resource-resolution-data.resource-key[1].value",
        "string-value": "david-the-boss-blah-2"
    }
}
]
}
}

```

1. SDNC Blueprint

```

• {
  "metadata": {
    "template_author": "aa0419",
    "template_name": "sdnc_vFW_blueprint1",
    "template_version": "1.0.0",
    "service-type": "vFW",
    "template_tags": "vFW, ONAP",
    "release": "1810",
    "vnf-type": "vFW"
  },
  "topology_template": {
    "inputs": {
      "request-id": {
        "required": true,
        "type": "string"
      },
      "service-instance-id": {
        "required": true,
        "type": "string"
      },
      "scope-type": {
        "required": true,
        "type": "string"
      },
      "action-name": {
        "required": true,
        "type": "string"
      },
      "hostname": {
        "required": true,
        "type": "string"
      },
      "resource-assignment-request": {
        "description": "This is Dynamic Data type for the receipe resource-assignment-action.",
        "required": false,
        "type": "dt-resource-assignment-request"
      }
    },
    "node_templates": {
      "resource-assignment-ra-component": {
        "type": "component-resource-assignment",
        "interfaces": {
          "org-onap-ccsdk-config-assignment-service-ConfigAssignmentNode": {
            "operations": {
              "process": {
                "inputs": {
                  "action-name": "{ \"get_input\" : \"action-name\" }",
                  "service-template-name": "{ \"get_attribute\" : \"service-template-name\" }",
                  "template-names": [
                    "sdnc_vnf_vFW",
                    "sdnc_base",
                    "sdnc_vFW",
                    "sdnc_vsn",

```

```

        "sdnc_vpg"
    ],
    "service-template-version": "{ \"get_attribute\" : \"service-template-version\" }",
    "resource-type": "vnf-type",
    "request-id": "{ \"get_input\" : \"request-id\" }",
    "resource-id": "{ \"get_input\" : \"hostname\" }"
},
"outputs": {
    "resource-assignment-params": "Success",
    "status": "status"
}
}
}
},
"capabilities": {
    "component-node": {

    }
}
},
"resource-assignment-action": {
    "type": "dg-resource-assignment",
    "properties": {
        "mode": "sync",
        "version": "LATEST",
        "is-start-flow": false
    },
    "interfaces": {
        "CONFIG": {
            "operations": {
                "ResourceAssignment": {
                    "inputs": {
                        "params": [

                        ]
                    }
                }
            }
        }
    },
    "capabilities": {
        "dg-node": {

        },
        "content": {
            "properties": {
                "type": "json"
            }
        }
    },
    "requirements": {
        "component-dependency": {
            "capability": "component-node",
            "node": "resource-assignment-ra-component",
            "relationship": "tosca.relationships.DependsOn"
        }
    }
},
"sdnc_vnf_vFW": {
    "type": "artifact-config-template",
    "properties": {
        "action-names": [
            "resource-assignment-action"
        ]
    },
    "capabilities": {
        "content": {
            "properties": {
                "content": "sdnc_vnf_vFW"
            }
        }
    }
}

```

```

},
"mapping": {
  "properties": {
    "mapping": [
      {
        "name": "service-instance-id",
        "property": {
          "description": "",
          "required": true,
          "type": "string",
          "status": "",
          "constraints": [
            {

            }
          ],
          "entry_schema": {
            "type": ""
          }
        },
        "input-param": false,
        "dictionary-name": "service-instance-id",
        "dictionary-source": "input",
        "dependencies": [

        ],
        "version": 0
      },
      {
        "name": "vnf-id",
        "property": {
          "description": "",
          "required": true,
          "type": "string",
          "status": "",
          "constraints": [
            {

            }
          ],
          "entry_schema": {
            "type": ""
          }
        },
        "input-param": false,
        "dictionary-name": "vnf-id",
        "dictionary-source": "input",
        "dependencies": [

        ],
        "version": 0
      },
      {
        "name": "vnf-model-customization-uuid",
        "property": {
          "description": "",
          "required": true,
          "type": "string",
          "status": "",
          "constraints": [
            {

            }
          ],
          "entry_schema": {
            "type": ""
          }
        },
        "input-param": false,
        "dictionary-name": "vnf-model-customization-uuid",
        "dictionary-source": "input",

```

```

        "dependencies": [
            ],
            "version": 0
        },
        {
            "name": "aic-cloud-region",
            "property": {
                "description": "",
                "required": true,
                "type": "string",
                "status": "",
                "constraints": [
                    {

                    }
                ],
                "entry_schema": {
                    "type": ""
                }
            },
            "input-param": false,
            "dictionary-name": "aic-cloud-region",
            "dictionary-source": "input",
            "dependencies": [

            ],
            "version": 0
        },
        {
            "name": "vnf_name",
            "property": {
                "description": "",
                "required": true,
                "type": "string",
                "status": "",
                "constraints": [
                    {

                    }
                ],
                "entry_schema": {
                    "type": ""
                }
            },
            "input-param": false,
            "dictionary-name": "vnf_name",
            "dictionary-source": "input",
            "dependencies": [

            ],
            "version": 0
        },
        {
            "name": "vf-naming-policy",
            "property": {
                "description": "",
                "required": true,
                "type": "string",
                "status": "",
                "constraints": [
                    {

                    }
                ],
                "entry_schema": {
                    "type": ""
                }
            },
            "input-param": false,
            "dictionary-name": "vf-naming-policy",

```

```

        "dictionary-source": "db",
        "dependencies": [
            "vnf-model-customization-uuid"
        ],
        "version": 0
    },
    {
        "name": "nf-role",
        "property": {
            "description": "",
            "required": true,
            "type": "string",
            "status": "",
            "constraints": [
                {

                }
            ],
            "entry_schema": {
                "type": ""
            }
        },
        "input-param": false,
        "dictionary-name": "nf-role",
        "dictionary-source": "db",
        "dependencies": [
            "vnf-model-customization-uuid"
        ],
        "version": 0
    }
]
}
}
}
},
"sdnc_vFW": {
    "type": "artifact-config-template",
    "capabilities": {
        "content": {
            "properties": {
                "content": "sdnc_vFW"
            }
        }
    },
    "mapping": {
        "properties": {
            "mapping": [
                {
                    "name": "service-instance-id",
                    "property": {
                        "description": "",
                        "required": true,
                        "type": "string",
                        "status": "",
                        "constraints": [
                            {

                            }
                        ],
                        "entry_schema": {
                            "type": ""
                        }
                    }
                },
                {
                    "name": "service-instance-id",
                    "property": {
                        "description": "",
                        "required": true,
                        "type": "string",
                        "status": "",
                        "constraints": [
                            {

                            }
                        ],
                        "entry_schema": {
                            "type": ""
                        }
                    }
                }
            ],
            "input-param": false,
            "dictionary-name": "service-instance-id",
            "dictionary-source": "input",
            "dependencies": [

            ],
            "version": 0
        }
    },
    {

```

```

    "name": "vnf-id",
    "property": {
      "description": "",
      "required": true,
      "type": "string",
      "status": "",
      "constraints": [
        {

        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
    "input-param": false,
    "dictionary-name": "vnf-id",
    "dictionary-source": "input",
    "dependencies": [

    ],
    "version": 0
  },
  {
    "name": "vnf-name",
    "property": {
      "description": "",
      "required": true,
      "type": "string",
      "status": "",
      "constraints": [
        {

        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
    "input-param": false,
    "dictionary-name": "vnf-name",
    "dictionary-source": "mdsal",
    "dependencies": [
      "service-instance-id"
    ],
    "version": 0
  },
  {
    "name": "vnf-model-customization-uuid",
    "property": {
      "description": "",
      "required": true,
      "type": "string",
      "status": "",
      "constraints": [
        {

        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
    "input-param": false,
    "dictionary-name": "vnf-model-customization-uuid",
    "dictionary-source": "input",
    "dependencies": [

    ],
    "version": 0
  },

```

```

{
  "name": "vf-module-id",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "vf-module-id",
  "dictionary-source": "input",
  "dependencies": [

  ],
  "version": 0
},
{
  "name": "vf-module-type",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "vf-module-type",
  "dictionary-source": "db",
  "dependencies": [
    "vf-module-model-customization-uuid"
  ],
  "version": 0
},
{
  "name": "vf-module-model-customization-uuid",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "vf-module-model-customization-uuid",
  "dictionary-source": "input",
  "dependencies": [

  ],
  "version": 0
}

```

```

},
{
  "name": "vfccustomizationuuid",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "vfccustomizationuuid",
  "dictionary-source": "db",
  "dependencies": [
    "vf-module-model-customization-uuid"
  ],
  "version": 0
},
{
  "name": "aic-cloud-region",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "aic-cloud-region",
  "dictionary-source": "input",
  "dependencies": [

  ],
  "version": 0
},
{
  "name": "availability_zone_0",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "availability_zone_0",
  "dictionary-source": "input",
  "dependencies": [

  ],

```

```

    "version": 0
  },
  {
    "name": "vm-type",
    "property": {
      "description": "",
      "required": true,
      "type": "string",
      "status": "",
      "constraints": [
        {

        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
    "input-param": false,
    "dictionary-name": "vm-type",
    "dictionary-source": "input",
    "dependencies": [

    ],
    "version": 0
  },
  {
    "name": "vnfc-model-invariant-uuid",
    "property": {
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            ]
        }
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        ]
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}

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    "type": "string",
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        "status": "",
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        "status": "",
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            }
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        "entry_schema": {
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    "dictionary-source": "mdsal",
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    "dictionary-source": "default",
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    "status": "",
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    "entry_schema": {
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  "dictionary-source": "mdsal",
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  "version": 0
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    "status": "",
    "constraints": [
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  "dictionary-source": "input",
  "dependencies": [

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  "version": 0
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    "type": "string",
    "status": "",
    "constraints": [
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    ],
    "entry_schema": {
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  "dictionary-source": "default",
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  ],

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    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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      "status": "",
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      "entry_schema": {
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    "dictionary-source": "db",
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    "version": 0
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    "property": {
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      "type": "",
      "status": "",
      "constraints": [
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      "entry_schema": {
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    "dictionary-name": "private-prefix-id",
    "dictionary-source": "input",
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      "entry_schema": {
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    "dictionary-name": "vpg_private_ip_1",
    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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]
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            "property": {
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            "dictionary-source": "input",
            "dependencies": [

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            "version": 0
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            "property": {
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    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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        "type": "string",
        "status": "",
        "constraints": [
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            }
        ],
        "entry_schema": {
            "type": ""
        }
    },
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    "dictionary-source": "mdsal",
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    ],
    "version": 0
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{
    "name": "vnf-model-customization-uuid",
    "property": {
        "description": "",
        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
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            }
        ],
        "entry_schema": {
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        }
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    "version": 0
},
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    "property": {

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        "status": "",
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    "dictionary-source": "db",
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    "property": {
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        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
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            }
        ],
        "entry_schema": {
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    "dependencies": [

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    "dependencies": [
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    "version": 0
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      "type": "string",
      "status": "",
      "constraints": [
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        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
    "input-param": false,
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    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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    "name": "aic_clli",
    "property": {
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      "required": true,
      "type": "string",
      "status": "",
      "constraints": [
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        }
      ],
      "entry_schema": {
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      }
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    "input-param": false,
    "dictionary-name": "aic_clli",
    "dictionary-source": "input",
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    "version": 0
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    "status": "",
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    ],
    "entry_schema": {
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  "dictionary-source": "db",
  "dependencies": [
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  ],
  "version": 0
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      }
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    "entry_schema": {
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  "dictionary-source": "db",
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    "status": "",
    "constraints": [
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  "dictionary-name": "nf-role",
  "dictionary-source": "default",
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  "dictionary-source": "db",
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    "status": "",
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    "default": "public_net_id"
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  "input-param": false,
  "dictionary-name": "public_net_id",
  "dictionary-source": "default",
  "dependencies": [

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  "version": 0
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  "property": {
    "description": "",
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    "type": "",
    "status": "",
    "constraints": [
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      }
    ],
    "entry_schema": {
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    }
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  "dictionary-source": "default",
  "dependencies": [

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  "version": 0
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  "property": {
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    "required": true,
    "type": "",
    "status": "",
    "constraints": [
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    ],
    "entry_schema": {
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    },
    "default": "Oam_Network_Puhf"
  },
  "input-param": false,
  "dictionary-name": "onap_private_subnet_id",

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            "required": true,
            "type": "",
            "status": "",
            "constraints": [
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            "entry_schema": {
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            }
        },
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        "dictionary-source": "db",
        "dependencies": [

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        "version": 0
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        "property": {
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            "required": true,
            "type": "",
            "status": "",
            "constraints": [
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        "dictionary-source": "db",
        "dependencies": [

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        "version": 0
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            "required": true,
            "type": "",
            "status": "",
            "constraints": [
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            "entry_schema": {
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        },
        "input-param": false,

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            "status": "",
            "constraints": [
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                }

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            "value": "nexus_artifact_repo",
            "default": "nexus_artifact_repo"
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        "input-param": false,
        "dictionary-name": "nexus_artifact_repo",
        "dictionary-source": "default",
        "dependencies": [

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        "version": 0
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        "property": {
            "description": "",
            "required": true,
            "type": "",
            "status": "",
            "constraints": [
                {

                }

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            "entry_schema": {
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            },
            "default": "onap_sg_PUhf"
        },
        "input-param": false,
        "dictionary-name": "sec_group",
        "dictionary-source": "default",
        "dependencies": [

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        "version": 0
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        "property": {
            "description": "",
            "required": true,
            "type": "",
            "status": "",
            "constraints": [
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                }

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            "entry_schema": {

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"dictionary-source": "mdsal",
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],
"version": 0
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    "property": {
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        "required": true,
        "type": "",
        "status": "",
        "constraints": [
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            }
        ],
        "entry_schema": {
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    "dictionary-name": "vsn_name_0",
    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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{
    "name": "vf-naming-policy",
    "property": {
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        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
            {

            }
        ],
        "entry_schema": {
            "type": ""
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        "default": "SDNC_Policy.Config_MS_ONAP_VSN_NAMING_TIMESTAMP"
    },
    "input-param": false,
    "dictionary-name": "vf-naming-policy",
    "dictionary-source": "default",
    "dependencies": [
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    ],
    "version": 0
},
{
    "name": "vf_module_name",
    "property": {
        "description": "",
        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
            {

            }
        ]
    }
}

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    ],
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  },
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  "dictionary-source": "input",
  "dependencies": [

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  "version": 0
},
{
  "name": "vf-module-label",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
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      }
    ],
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "vf-module-label",
  "dictionary-source": "db",
  "dependencies": [
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  ],
  "version": 0
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{
  "name": "private-prefix-id",
  "property": {
    "description": "",
    "required": true,
    "type": "string",
    "status": "",
    "constraints": [
      {

      }
    ],
    "entry_schema": {
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    }
  },
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  "dictionary-name": "private-prefix-id",
  "dictionary-source": "input",
  "dependencies": [

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  "version": 0
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{
  "name": "vsn_private_ip_1",
  "property": {
    "description": "",
    "required": true,
    "type": "",
    "status": "",
    "constraints": [
      {

```

```

        }
      ],
      "entry_schema": {
        "type": ""
      }
    },
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    "dictionary-name": "vsn_private_ip_1",
    "dictionary-source": "input",
    "dependencies": [

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    "version": 0
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  {
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    "property": {
      "description": "",
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      "type": "",
      "status": "",
      "constraints": [
        {

        }
      ]
    },
    "entry_schema": {
      "type": ""
    }
  },
  "input-param": false,
  "dictionary-name": "protected-prefix-id",
  "dictionary-source": "input",
  "dependencies": [

  ],
  "version": 0
},
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    "description": "",
    "required": true,
    "type": "",
    "status": "",
    "constraints": [
      {

      }
    ]
  },
  "entry_schema": {
    "type": ""
  }
},
"input-param": false,
"dictionary-name": "vsn_private_ip_0",
"dictionary-source": "input",
"dependencies": [

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"version": 0
}
]
}
}
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"sdnc_base": {
  "type": "artifact-config-template",
  "capabilities": {
    "content": {

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    }
  },
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          "property": {
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            "type": "string",
            "status": "",
            "constraints": [
              {

            }

            ],
            "entry_schema": {
              "type": ""
            }
          },
          "input-param": false,
          "dictionary-name": "service-instance-id",
          "dictionary-source": "input",
          "dependencies": [

        ],
        "version": 0
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      {
        "name": "vnf-id",
        "property": {
          "description": "",
          "required": true,
          "type": "string",
          "status": "",
          "constraints": [
            {

          }

          ],
          "entry_schema": {
            "type": ""
          }
        },
        "input-param": false,
        "dictionary-name": "vnf-id",
        "dictionary-source": "input",
        "dependencies": [

      ],
      "version": 0
    ],
    {
      "name": "vnf-model-customization-uuid",
      "property": {
        "description": "",
        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
          {

        }

        ],
        "entry_schema": {
          "type": ""
        }
      }
    },
  },

```

```

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        "dictionary-source": "input",
        "dependencies": [

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        "version": 0
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        "name": "aic-cloud-region",
        "property": {
            "description": "",
            "required": true,
            "type": "string",
            "status": "",
            "constraints": [
                {

                }

            ],
            "entry_schema": {
                "type": ""
            }
        },
        "input-param": false,
        "dictionary-name": "aic-cloud-region",
        "dictionary-source": "input",
        "dependencies": [

        ],
        "version": 0
    },
    {
        "name": "nf-role",
        "property": {
            "description": "",
            "required": true,
            "type": "string",
            "status": "",
            "constraints": [
                {

                }

            ],
            "entry_schema": {
                "type": ""
            }
        },
        "input-param": false,
        "dictionary-name": "nf-role",
        "dictionary-source": "db",
        "dependencies": [
            "vnf-model-customization-uuid"
        ],
        "version": 0
    },
    {
        "name": "vnf-name",
        "property": {
            "description": "",
            "required": true,
            "type": "string",
            "status": "",
            "constraints": [
                {

                }

            ],
            "entry_schema": {
                "type": ""
            }
        }
    }

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```

    },
    "input-param": false,
    "dictionary-name": "vnf-name",
    "dictionary-source": "mdsal",
    "dependencies": [
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    ],
    "version": 0
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    "property": {
        "description": "",
        "required": true,
        "type": "",
        "status": "",
        "constraints": [
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            }
        ],
        "entry_schema": {
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        },
        "default": "Protected_Network_Puhf"
    },
    "input-param": false,
    "dictionary-name": "protected_private_subnet_id",
    "dictionary-source": "default",
    "dependencies": [

    ],
    "version": 0
},
{
    "name": "unprotected_private_net_cidr",
    "property": {
        "description": "",
        "required": true,
        "type": "",
        "status": "",
        "constraints": [
            {

            }
        ],
        "entry_schema": {
            "type": ""
        }
    },
    "input-param": false,
    "dictionary-name": "unprotected_private_net_cidr",
    "dictionary-source": "db",
    "dependencies": [

    ],
    "version": 0
},
{
    "name": "protected_private_net_cidr",
    "property": {
        "description": "",
        "required": true,
        "type": "",
        "status": "",
        "constraints": [
            {

            }
        ],
        "entry_schema": {

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        "type": ""
    }
},
"input-param": false,
"dictionary-name": "protected_private_net_cidr",
"dictionary-source": "db",
"dependencies": [

],
"version": 0
}
]
}
}
}
},
"node_types": {
    "tosca.nodes.Component": {
        "description": "This is default Component Node",
        "version": "1.0.0",
        "derived_from": "tosca.nodes.Root"
    },
    "tosca.nodes.DG": {
        "description": "This is Directed Graph Node Type",
        "version": "1.0.0",
        "derived_from": "tosca.nodes.Root"
    },
    "tosca.nodes.Artifact": {
        "description": "This is Deprecated Artifact Node Type.",
        "version": "1.0.0",
        "derived_from": "tosca.nodes.Root"
    },
    "component-resource-assignment": {
        "description": "This is Resource Assignment Component API",
        "version": "1.0.0",
        "capabilities": {
            "component-node": {
                "type": "tosca.capabilities.Node"
            }
        }
    },
    "interfaces": {
        "org-onap-ccsdk-config-assignment-service-ConfigAssignmentNode": {
            "operations": {
                "process": {
                    "inputs": {
                        "action-name": {
                            "description": "Action Name of the process",
                            "required": true,
                            "type": "string"
                        },
                        "service-template-name": {
                            "description": "Service Template Name.",
                            "required": true,
                            "type": "string"
                        },
                        "service-template-version": {
                            "description": "Service Template Version.",
                            "required": true,
                            "type": "string"
                        },
                        "resource-type": {
                            "description": "Request type.",
                            "required": true,
                            "type": "string"
                        },
                        "template-names": {
                            "description": "Name of the artifact Node Templates, to get the template Content.",
                            "required": true,
                            "type": "list",

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        "entry_schema": {
            "type": "string"
        }
    },
    "request-id": {
        "description": "Request Id, Unique Id for the request.",
        "required": true,
        "type": "string"
    },
    "resource-id": {
        "description": "Resource Id.",
        "required": true,
        "type": "string"
    }
},
"outputs": {
    "resource-assignment-params": {
        "required": true,
        "type": "string"
    },
    "status": {
        "required": true,
        "type": "string"
    }
}
}
}
},
"derived_from": "tosca.nodes.Component"
},
"dg-resource-assignment": {
    "description": "This is Resource Assignment Directed Graph",
    "version": "1.0.0",
    "properties": {
        "mode": {
            "required": false,
            "type": "string",
            "default": "sync"
        },
        "version": {
            "required": false,
            "type": "string",
            "default": "LATEST"
        },
        "is-start-flow": {
            "required": false,
            "type": "boolean",
            "default": "false"
        }
    }
},
"capabilities": {
    "dg-node": {
        "type": "tosca.capabilities.Node"
    },
    "content": {
        "type": "tosca.capabilities.Content",
        "properties": {
            "type": {
                "required": false,
                "type": "string",
                "default": "json"
            },
            "content": {
                "required": false,
                "type": "string"
            }
        }
    }
}
},
"requirements": {

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    "component-dependency": {
      "capability": "component-node",
      "node": "component-resource-assignment",
      "relationship": "tosca.relationships.DependsOn"
    }
  },
  "interfaces": {
    "CONFIG": {
      "operations": {
        "ResourceAssignment": {
          "inputs": {
            "params": {
              "required": false,
              "type": "list",
              "entry_schema": {
                "type": "datatype-property"
              }
            }
          }
        }
      }
    }
  }
},
"derived_from": "tosca.nodes.DG"
},
"artifact-config-template": {
  "description": "This is Configuration Velocity Template",
  "version": "1.0.0",
  "properties": {
    "action-names": {
      "required": true,
      "type": "list",
      "entry_schema": {
        "type": "string"
      }
    }
  }
},
"capabilities": {
  "content": {
    "type": "tosca.capabilities.Content",
    "properties": {
      "content": {
        "required": true,
        "type": "string"
      }
    }
  }
},
"mapping": {
  "type": "tosca.capabilities.Mapping",
  "properties": {
    "mapping": {
      "required": false,
      "type": "list",
      "entry_schema": {
        "type": "datatype-resource-assignment"
      }
    }
  }
}
},
"derived_from": "tosca.nodes.Artifact"
}
},
"data_types": {
  "datatype-property": {
    "version": "1.0.0",
    "description": "This is Entry point Input Data Type, which is dynamic datatype, The parameter names will be populated during the Design time for each inputs",
    "properties": {
      "type": {
        "required": true,

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        "type": "string"
    },
    "description": {
        "required": false,
        "type": "string"
    },
    "required": {
        "required": false,
        "type": "boolean"
    },
    "default": {
        "required": false,
        "type": "string"
    },
    "entry_schema": {
        "required": false,
        "type": "string"
    }
},
"derived_from": "tosca.datatypes.Root"
},
"datatype-resource-assignment": {
    "version": "1.0.0",
    "description": "This is Resource Assignment Data Type",
    "properties": {
        "property": {
            "required": true,
            "type": "datatype-property"
        },
        "input-param": {
            "required": true,
            "type": "boolean"
        },
        "dictionary-name": {
            "required": false,
            "type": "string"
        },
        "dictionary-source": {
            "required": false,
            "type": "string"
        },
        "dependencies": {
            "required": true,
            "type": "list",
            "entry_schema": {
                "type": "string"
            }
        },
        "status": {
            "required": false,
            "type": "string"
        },
        "message": {
            "required": false,
            "type": "string"
        },
        "updated-date": {
            "required": false,
            "type": "string"
        },
        "updated-by": {
            "required": false,
            "type": "string"
        }
    },
    "derived_from": "tosca.datatypes.Root"
},
"dt-resource-assignment-request": {
    "version": "1.0.0",
    "description": "This is Dynamic Data type definition generated from resource mapping for the
config template name activate-template.",

```

```

    "properties": {
      "password-user-ftpap-nsm": {
        "required": true,
        "type": "string",
        "default": "password-user-ftpap"
      },
      "reservation-id": {
        "required": true,
        "type": "string",
        "value": "123"
      },
      "security-manager-resource-key": {
        "required": true,
        "type": "string",
        "value": "sdnc"
      },
      "password-user-ftpap": {
        "description": "",
        "required": true,
        "type": "string",
        "status": "",
        "constraints": [
          {
            }
        ],
        "entry_schema": {
          "type": ""
        }
      }
    },
    "derived_from": "tosca.datatypes.Dynamic"
  }
}

```

2. Artifact Templates

- VNF



- BASE



sdnc_base.json

- vFW



sdnc_vFW.json

- vSN



sdnc_vsn.json

- vPG



sdnc_vpg.json

3. Data Dictionaries



New_DD.zip