Service Orchestrator

Automation vs Orchestration

- Automation is a way to eliminate the manual effort/human intervention involved in activities and bring in an ability to perform the same repeatedly, consistently and with better efficiency.

- Orchestration is executing the automation/manual ability of various modules in harmony as a consolidated process or workflow to accomplish the desired tasks.

Service Orchestrator

- The SO provides the highest level of service orchestration in the ONAP architecture. SO is implemented via BPMN flows that operate on Models distributed from SDC that describe the Services and associated VNFs and other Resource components.

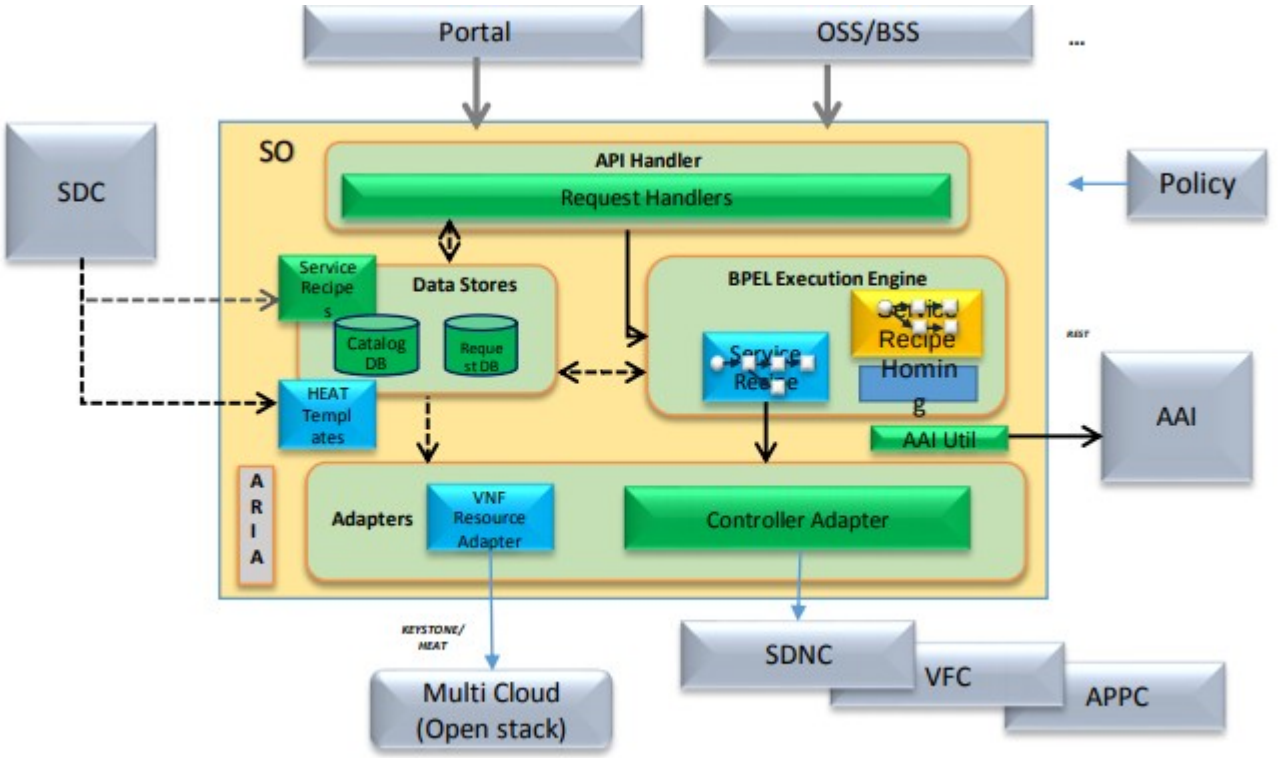
- The orchestration engine is a reusable service. Any component of the architecture can execute process workflows. Orchestration services can consume a process workflow and execute it

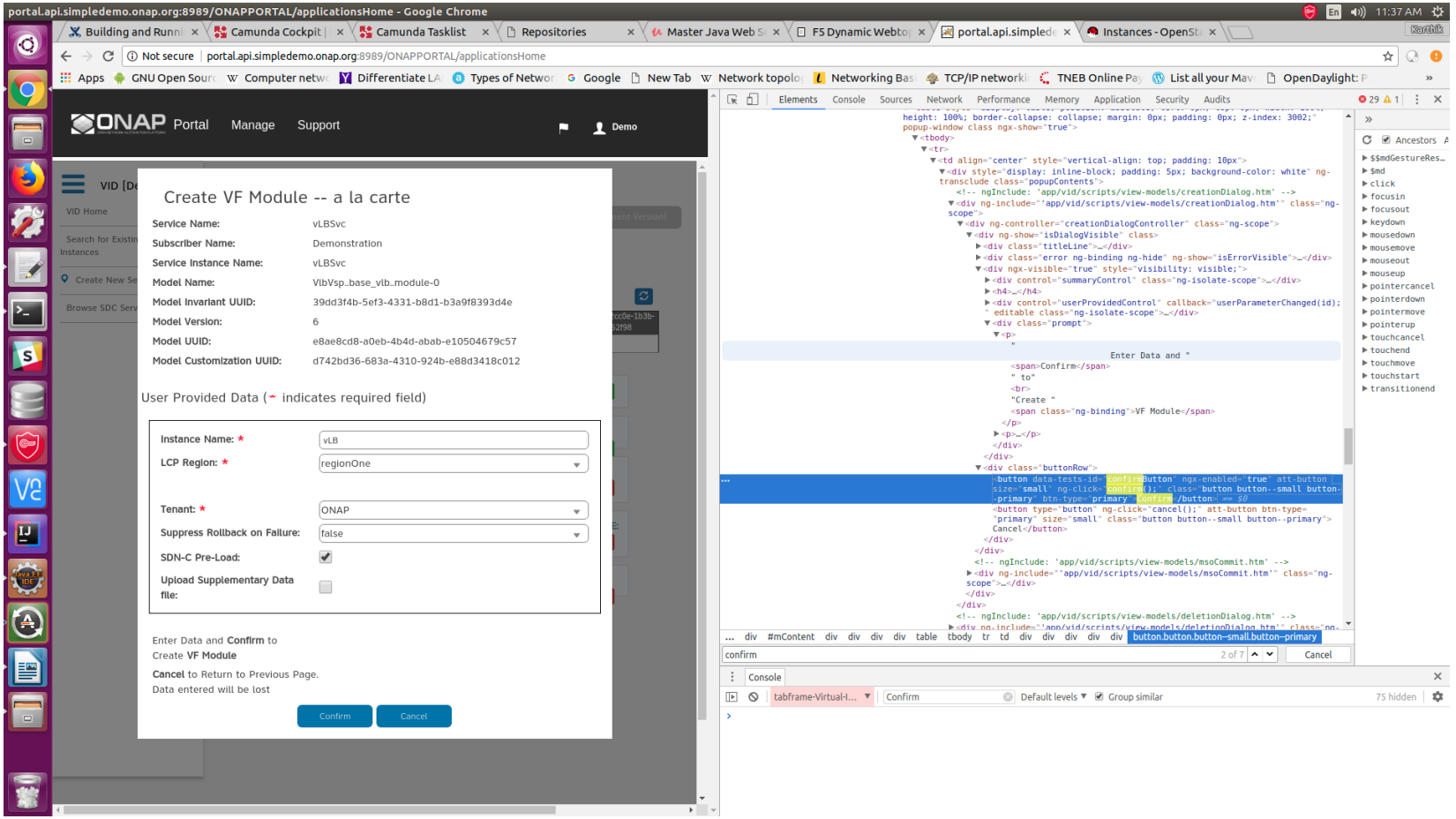
- Orchestration processes interact with other platform components or external systems via standard and well-defined APIs.

BPMN

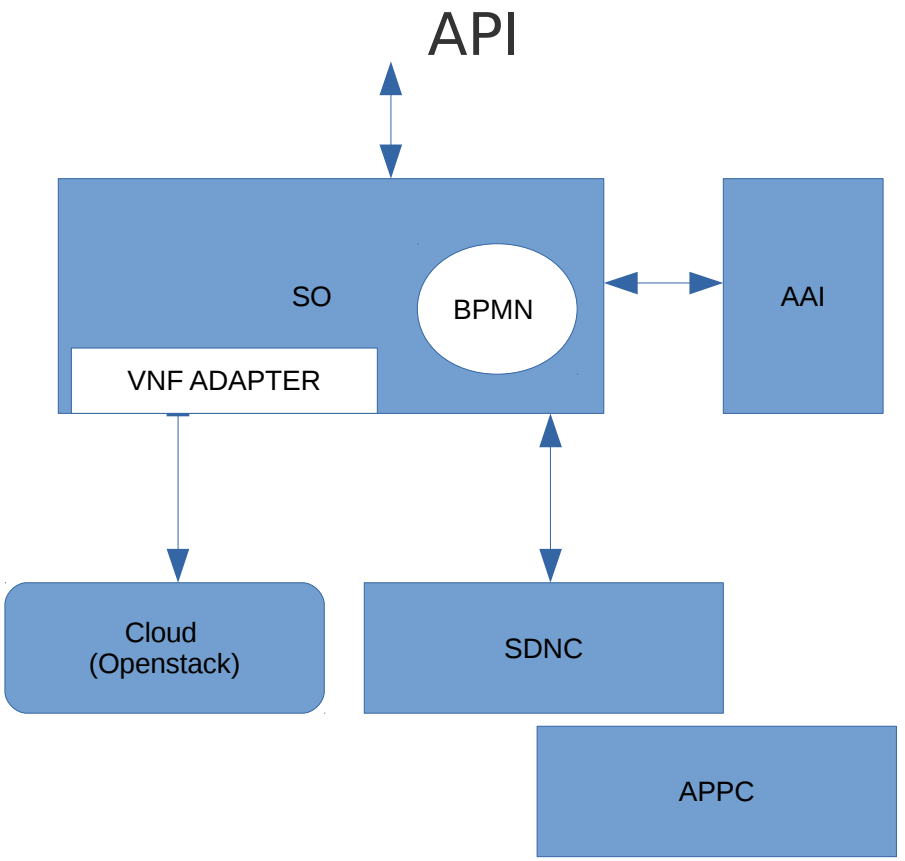
- The primary goal of BPMN is to provide a notation that is readily understandable by all business users, from the business analysts that create the initial drafts of the processes, to the technical developers responsible for implementing the technology that will perform those processes, and finally, to the business people who will manage and monitor those processes.
- BPMN creates a standardized bridge for the gap between the business process design and process implementation.

SO Software Architecture




portal.api.simpledemo.onap.org:8989/ONAPPORTAL/applicationsHome - Google Chrome
ONAP Portal Manage Support Demo
Create VF Module -- a la carte
Service Name: vLBSvc
Subscriber Name: Demonstration
Service Instance Name: vLBSvc
Model Name: VibVsp..base_vlb..module-0
Model Invariant UUID: 39dd3f4b-5ef3-4331-b8d1-b3a9f8393d4e
Model Version: 6
Model UUID: e8ae8cd8-a0eb-4b4d-abab-e10504679c57
Model Customization UUID: d742bd36-683a-4310-924b-e88d3418c012
User Provided Data (* indicates required field)
Instance Name: *
vLB
LCP Region: *
regionOne
Tenant: *
ONAP
Suppress Rollback on Failure:
false
SDN-C Pre-Load:
Upload Supplementary Data file:
Enter Data and Confirm to Create VF Module
Cancel to Return to Previous Page.
Data entered will be lost
Confirm
Cancel
Elements Console Sources Network Performance Memory Application Security Audits
Console

Service Instantiation Flow



BPMN Flow

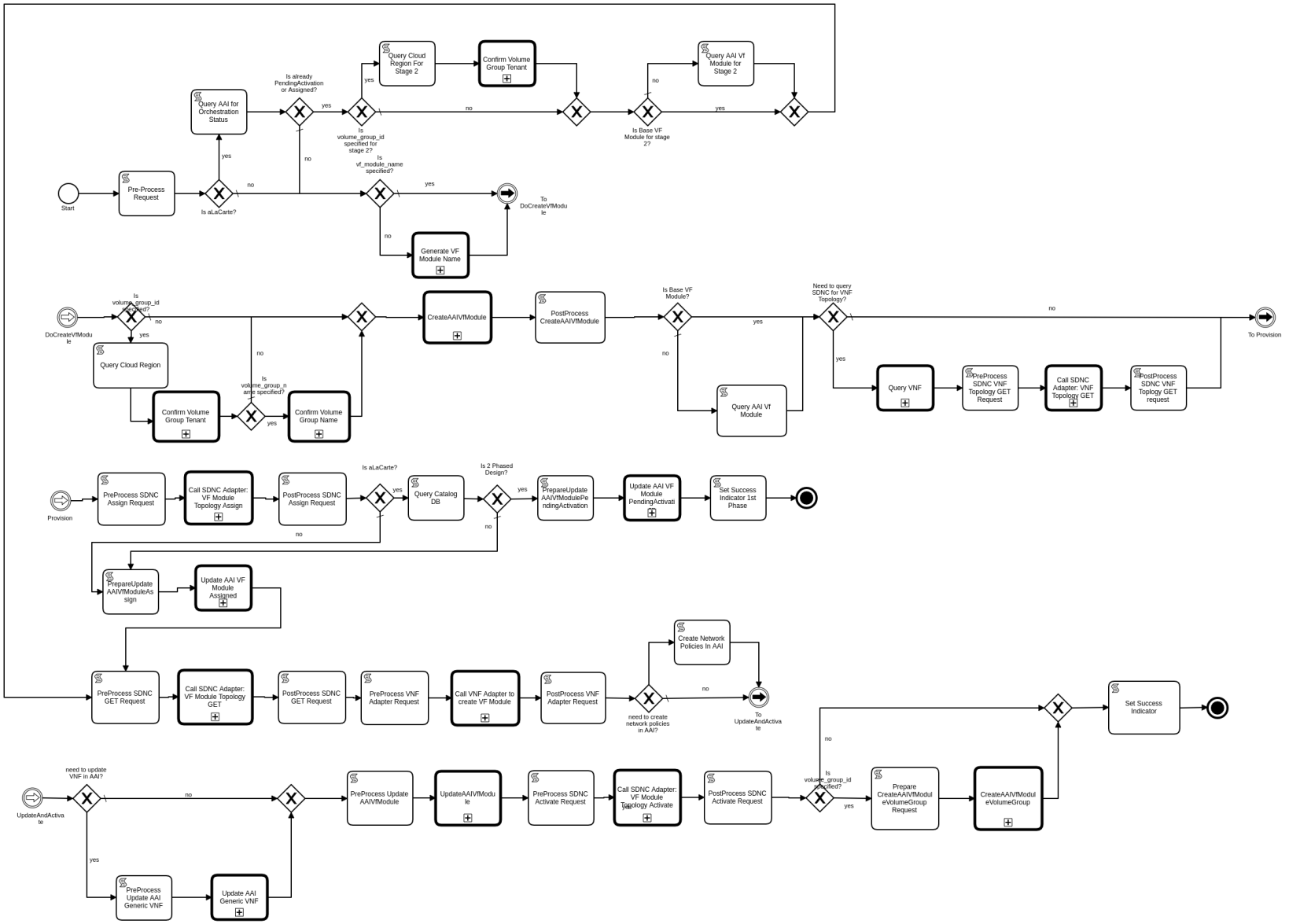
1. Save the Requests
2. Call APP-C VNF start (run APPc Command) `Action.HealthCheck`
3. Do Create Vf Module
   - Validation of Orchetration Status,VF Module Name, Cloud Region, Volume Group Tenant
   - Create AAI Vf Module: Adding VF module to AAI (POST request)
   - Need to query SDNC for VNF Topology? (v1707)
     ~ call to SDNC Adapter : VNF Topology GET
   - Call SDNC Adapter: VF Module Topology Assign Call
     ~ SvcAction>${action}</sdncadapter:SvcAction> | action : assign
   - Is Phase 2 Design ?
     ~ true --> OrchestrationStatus = “PendingActivation”
     ~ False --> OrchestrationStatus = “Assigned”
   - Update AAI VF Module Assigned
   - Call SDNC Adapter: VF Module Topology GET
     ~ SvcAction>query</sdncadapter:SvcAction>
   - Pre Process VNF Adapter Request
     ~ Get SDNC Response Data for VF Module Topology
     ~ Get SDNC Response Data for Vnf Topology
     ~ vfModuleParams = buildVfModuleParamsFromCombinedTopologies (vnfParamsMap, vnfSdncGetResponse, vfModuleSdncGetResponse,vnfId, vnfName,vfModuleId, vfModuleName, vfModuleIndex, environmentContext, workloadContext)

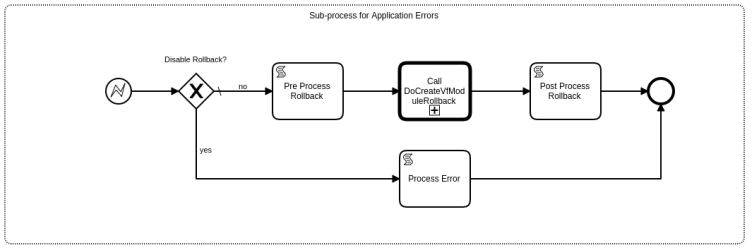
- Call VNF Adapter to create VF Module

  ~ PayLoad

```
def createVnfARequest = """
<createVfModuleRequest>
<cloudSiteId>${cloudSiteId}</cloudSiteId>
<tenantId>${tenantId}</tenantId>
<vnfId>${vnfId}</vnfId>
<vnfName>${vnfName}</vnfName>
<vfModuleName>${vfModuleName}</vfModuleName>
<vfModuleId>${vfModuleId}</vfModuleId>
<vnfType>${vnfType}</vnfType>
<vfModuleType>${vfModuleModelName}</vfModuleType>
<vnfVersion>${asdcServiceModelVersion}</vnfVersion>
<modelCustomizationUuid>${modelCustomizationUuid}</modelCustomizationUuid>
<requestType></requestType>
<volumeGroupId>${volumeGroupId}</volumeGroupId>
<volumeGroupStackId>${volumeGroupStackId}</volumeGroupStackId>
<baseVfModuleId>${baseVfModuleId}</baseVfModuleId>
<baseVfModuleStackId>${baseVfModuleStackId}</baseVfModuleStackId>
<skipAAI>true</skipAAI>
<backout>${backoutOnFailure}</backout>
<failIfExists>true</failIfExists>
<vfModuleParams>
${vfModuleParams}
</vfModuleParams>
<msoRequest>
<requestId>${requestId}</requestId>
<serviceInstanceId>${svcInstId}</serviceInstanceId>
</msoRequest>
<messageId>${messageId}<messageId>
<notificationUrl>${notificationUrl}</notificationUrl>
</createVfModuleRequest>"""
```

- Post Process VNF Adapter Request
  - execution.setVariable("DCVFM_vnfVfModuleCreateCompleted", true)
    "Received heat stack id from VNF Adapter: "
  - execution.setVariable("DCVFM_heatStackId", heatStackId)
- Need to create network policies in AAI?
  - Query AAI for this network policy , If already there no need to add ,else add the policy to AAI
- Need to update Generic VNF in AAI?
  - If yes, Construct and send a PUT request to AAI to update the Generic VNF.
- Update AAI Vf-Module
  - execution.setVariable("DCVFM_orchestrationStatus", "Created")
  - Construct and send a PATCH request to AAI to update the VF Module.
- SDNC Activate Request
  - String activateSDNCRequest = buildSDNCRequest(execution, svcInstId, "activate")
  - Invoke SDNC – Adapter
- Create AAI VfModule VolumeGroup , if volume_group_id specified
- Update Infra request
  - <statusMessage>VF Module successfully created</statusMessage>
  - <requestStatus>COMPLETE</requestStatus>
- MSO Completion Handler
  - statusMessage = "Resource Completed Successfully"
  - Update DB


Start
Pre-Process Request
Is aLaCarte?
Query AAI for Orchestration Status
Is already PendingActivation or Assigned?
Is volume_group_id specified for stage 2?
Query Cloud Region For Stage 2
Confirm Volume Group Tenant
Is vf_module_name specified?
Generate VF Module Name
To DoCreateVfModule
Is Base VF Module for stage 2?
Query AAI Vf Module for Stage 2
DoCreateVfModule
Is volume_group_id specified?
Query Cloud Region
Confirm Volume Group Tenant
Is volume_group_name specified?
Confirm Volume Group Name
CreateAAIVfModule
PostProcess CreateAAIVfModule
Is Base VF Module?
Query AAI Vf Module
Need to query SDNC for VNF Topology?
Query VNF
PreProcess SDNC VNF Topology GET Request
Call SDNC Adapter: VNF Topology GET
PostProcess SDNC VNF Toplogy GET request
To Provision
Provision
PreProcess SDNC Assign Request
Call SDNC Adapter: VF Module Topology Assign
PostProcess SDNC Assign Request
Is aLaCarte?
Query Catalog DB
Is 2 Phased Design?
PrepareUpdate AAIVfModulePendingActivation
Update AAI VF Module PendingActivati
Set Success Indicator 1st Phase
PrepareUpdate AAIVfModuleAssign
Update AAI VF Module Assigned
PreProcess SDNC GET Request
Call SDNC Adapter: VF Module Topology GET
PostProcess SDNC GET Request
PreProcess VNF Adapter Request
Call VNF Adapter to create VF Module
PostProcess VNF Adapter Request
Create Network Policies In AAI
need to create network policies in AAI?
To UpdateAndActivate
Set Success Indicator
UpdateAndActivate
need to update VNF in AAI?
PreProcess Update AAIVfModule
UpdateAAIVfModule
PreProcess SDNC Activate Request
Call SDNC Adapter: VF Module Topology Activate
PostProcess SDNC Activate Request
Is volume_group_id specified?
Prepare CreateAAIVfModuleVolumeGroup Request
CreateAAIVfModuleVolumeGroup
PreProcess Update AAI Generic VNF
Update AAI Generic VNF


Sub-process for Application Errors
Disable Rollback?
Pre Process Rollback
Call DoCreateVfModuleRollback
Post Process Rollback
Process Error

Thank You