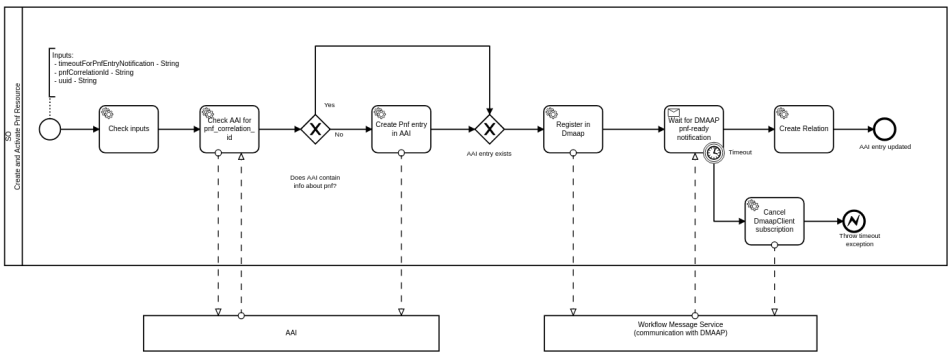
PNF PnP workflow migration to Building Blocks

Goal

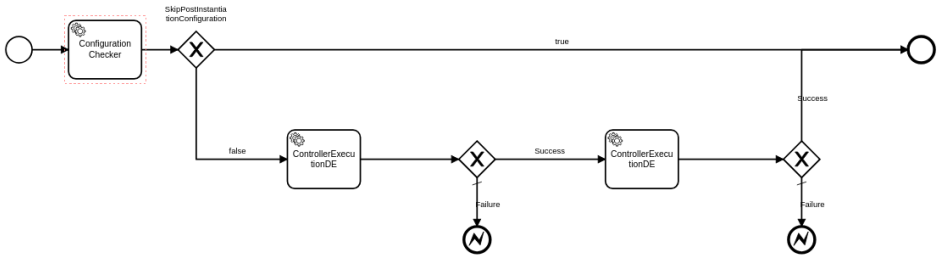
- Migrate PNF PNP workflow to Building Blocks (BBs/GR_API).
- Include newly created BBs in Service-Macro-Create flow.
- Leave legacy implementation using VNF_API intact.

By PNF PNP workflow we understand 2 BPMNs:

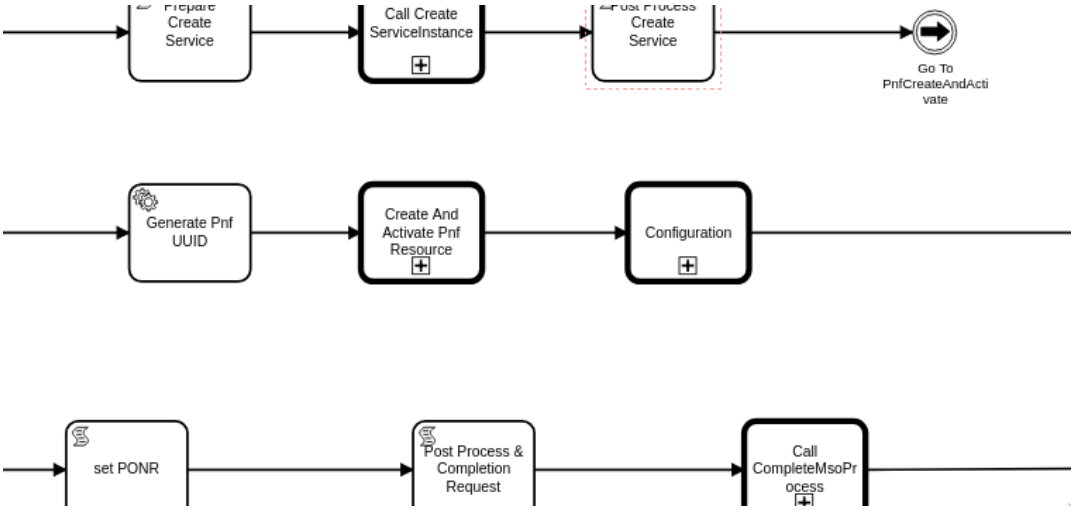
- CreateAndActivatePnfResource



- ConfigurePnfResource



Both included in CreateVcpeResCustService_simplified BPMN



JIRA

SO-2556 - Getting issue details... STATUS

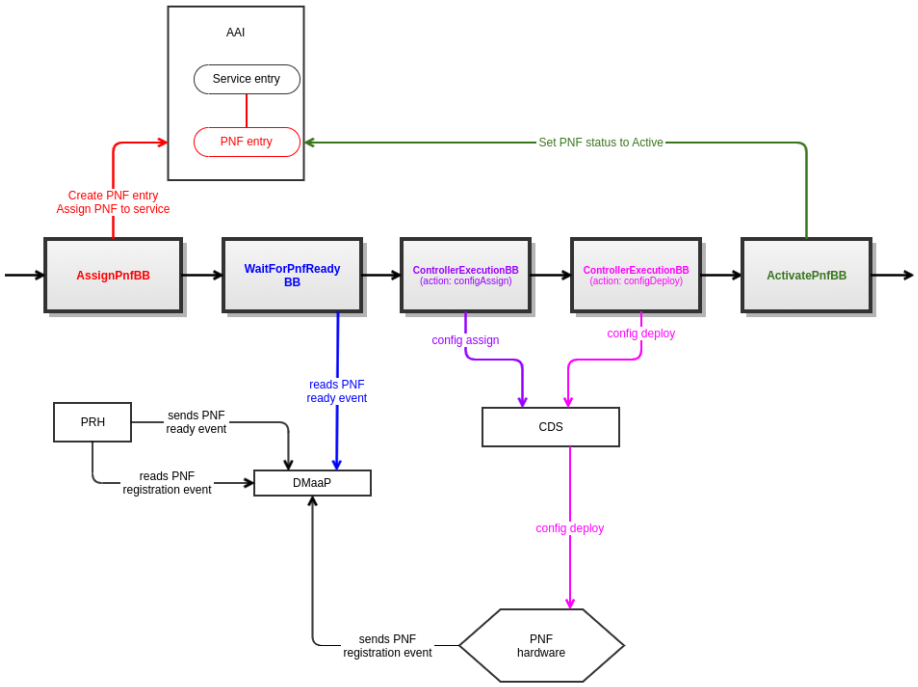
SO-2785 - Getting issue details... STATUS

VID-693 - Getting issue details... STATUS

Involved parties

- Lukasz Grech, Damian Nowak - PNF PNP workflow migration to BBs
- Oskar Malm - ConfigurePnfResource.bpmn (previous, non-BB implementation)
- Henry Xie - SO-CDS integration, new API for calling CDS from SO
- Yuriy Malakov - CDS, SO-CDS integration
- Rahul Tyagi - PNF SW upgrade, SO-CDS integration

Proposed building blocks



AssignPnfBB

- Responsibility:
  - Creates PNF entry in AAI (with PNF name chosen by user)
  - Additionally stores PNF model-related parameters in AAI (SO-2640 - Getting issue details... STATUS):
    - model-customization-id
    - model-invariant-id
    - model-version-id
  - Makes a link in AAI between Service entry and PNF entry
  - Sets PNF orchestration status in AAI to Assigned
- Currently implemented in CreateAndActivatePnfResource.bpmn

WaitForPnfReadyBB

- Responsibility:
  - Waits for "PNF ready" event sent from PRH to DMaaP
    - pnfCorrelationId from the event must match PNF instance name provided by the user during service instantiation
  - Sets PNF orchestration status in AAI to:
    - Register - when starting to wait for PNF ready event
    - Registered - when PNF ready event is successfully received
- Currently implemented in CreateAndActivatePnfResource.bpmn

Support for config assign (ControllerExecutionBB, action: configAssign)

SO-2646 - Getting issue details... STATUS

- Responsibility:
  - Runs config assign via CDS
- Currently implemented in ConfigurePnfResource.bpmn
- We will reuse generic BPMN for calling CDS (ControllerExecutionBB)
- Things to consider:
  - SkipPostInstantiationConfiguration should be taken into account

Support for config deploy (ControllerExecutionBB, action: configDeploy)

SO-2647 - Getting issue details... STATUS

- Responsibility:
    - Runs config deploy via CDS
- Currently implemented in ConfigurePnfResource.bpmn
- We will reuse generic BPMN for calling CDS (ControllerExecutionBB)
- Things to consider:
    - SkipPostInstantiationConfiguration should be taken into account

ActivatePnfBB

- Responsibility:
    - Sets PNF orchestration status in AAI as Active

Sequence in Service-Macro-Create flow

1. AssignServiceInstanceBB
2. CreateNetworkCollectionBB
3. AssignNetworkBB
4. AssignVnfBB
5. AssignVolumeGroupBB
6. AssignVfModuleBB
7. **AssignPnfBB**
8. **WaitForPnfReadyBB**
9. **ControllerExecutionBB (action: configAssign, scope: pnf)**
10. **ControllerExecutionBB (action: configDeploy, scope: pnf)**
11. **ActivatePnfBB**
12. ConfigAssignVnfBB
13. CreateNetworkBB
14. ActivateNetworkBB
15. CreateVolumeGroupBB
16. ActivateVolumeGroupBB
17. CreateVfModuleBB
18. ActivateVfModuleBB
19. ConfigDeployVnfBB
20. ActivateVnfBB
21. ActivateNetworkCollectionBB
22. ActivateServiceInstanceBB

SO - required changes

API handler

GR API

SO API currently doesn't allow to send PNF information in user data section.

Here's the proposed request which includes PNFs:

```
{
    "requestDetails":{
        "modelInfo":{
            "modelInvariantId":service_model_invariant_uuid,
            "modelVersionId":service_model_uuid,
            "modelName":service_model_name,
            "modelType":"service",
            "modelVersion":"1.0"
        },
        "owningEntity":{
            "owningEntityId":"3fa3e96c-dd51-4c77-818d-f130b613f1f8",
            "owningEntityName":"OE-Demonstration"
        },
        "subscriberInfo":{
            "globalSubscriberId":"Demonstration"
        },
        "requestInfo":{
            "instanceName":service_instance_name,
            "productFamilyId":"ff9262e1-5e31-48dc-aa71-e3f0a7ba1b8c",
            "source":"VID",
            "suppressRollback": False,
            "requestorId":"demo"
        },
        "requestParameters":{
            "subscriptionServiceType":"vFW",
            "aLaCarte": False,
            "userParams":[
                {
                    "service":{
                        "modelInfo":{
                            "modelVersionId":service_model_uuid,
                            "modelName":service_model_name,
                            "modelType":"service"
                        },
                        "instanceName":service_instance_name,
                        "instanceParams":[],
                        "resources":{
                            "pnfs":[
                                {
                                    "modelInfo":{
                                        "modelCustomizationName":nf_resource_name,
                                        "modelCustomizationId":nf_resource_uuid,
                                        "modelInvariantId":nf_model_invariant_uuid,
                                        "modelVersionId":nf_model_uuid,
                                        "modelName":nf_model_name,
                                        "modelType":"pnf",
                                        "modelVersion":"1.0"
                                    },
                                    "platform":{
                                        "platformName":"Platform-Demonstration"
                                    },
                                    "lineOfBusiness":{
                                        "lineOfBusinessName":"LOB-Demonstration"
                                    },
                                    "productFamilyId":"ff9262e1-5e31-48dc-aa71-e3f0a7ba1b8c",
                                    "instanceParams":[],
                                    "instanceName":nf_instance_name
                                }
                            ]
                        }
                    }
                },
                {
                    "Homing_Solution":"none"
                }
            ]
        }
    }
}
```

Building Block framework

Service decomposition (Retrieve BB Execution List)

- PNFs should be recognized in service model and proper BBs should be assigned for execution.

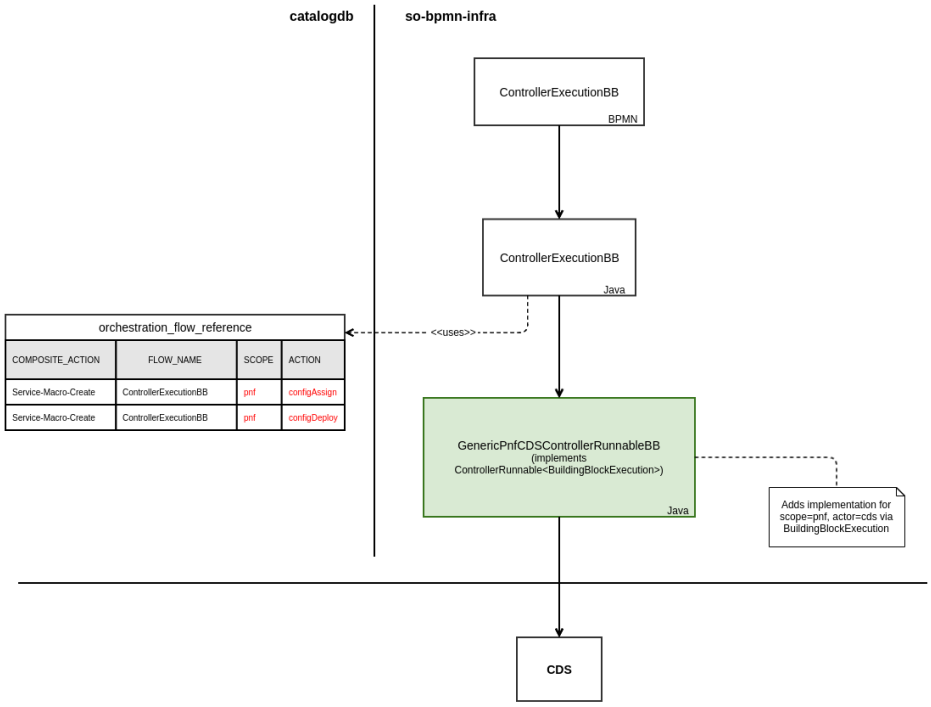
GeneralBuildingBlock initialization (BB Input Setup)

- PNF resources should be properly initialized in GeneralBuildingBlockServiceInstance

Generic controller BB working with PNFs

- Update will be needed for BBInputSetup and WorkflowAction to support BBs which do not contain PNF in its name. Similarly as it was done for VNFs:
  - https://gerrit.onap.org/r/c/so/+/106108
  - https://gerrit.onap.org/r/c/so/+/106637

PNF PNP workflow integration with CDS



VID - required changes

VID-693 - Getting issue details... STATUS

Updates for service macro instantiation:

- "unlock" modern UI when for PNFs
- allow to assign PNF instance name (will be used instead of pnfCorrelationId)
- ensure that proper request is sent to SO

Other considerations

- Are all required PNF parameters included in GeneralBuildingBlock->ServiceInstancePnf?
  - Currently those are:
    - pnf-id
    - pnf-name

        - role
        - orchestration-status
        - cloud-region
    - Currently AAI schema (aai_schema_v19.xsd) for PNF contains:
        - Fields: pnf-name, pnf-name2, selflink, pnf-name2-source, pnf-id, equip-type, equip-vendor, equip-model, management-option, orchestration-status, ipaddress-v4-oam, sw-version, in-maint, frame-id, serial-number, ipaddress-v4-loopback-0, ipaddress-v6-loopback-0, ipaddress-v4-aim, ipaddress-v6-aim, ipaddress-v6-oam, inv-status, resource-version, prov-status, nf-role, admin-status, operational-status, **model-customization-id, model-invariant-id, model-version-id (from SO cataloge)**, pnf-ipv4-address, pnf-ipv6-address
        - Sub-structures: software-versions, relationship-list, p-interfaces, lag-interfaces, vrfs
    - ⚠️ BBInputSetup implementation does not mention PNF at all - is it even initialized in GeneralBuildingBlock?
    - PNF ip is resolved by CDS by PNF ID (it should be in AAI) - it's populated by PRH
- How to include new BBs in Service-Macro-Create flow?
    - **Service decomposition in WorkflowActionBB may not unserstand PNFs (Retrieve BB Execution List)**
    - **Service decomposition should handle SkipPostInstantiationConfiguration**
- PNF orchestration status changes in AAI - which states should be assigned in which steps of the workflow
- PNF SW upgrade (Oskar Malm)
    - **PNF should be active - PNP is finished**
    - **new Upgrade flow will be created (BBs vs traditional considered)**
- 5G NRM Configuration - plan for new BB which invokes configuration via CDS of NRM resource(?) (Yaoguang Wang, see https://wiki.onap.org/display/DW/SO+Weekly+Meeting+2019-12-4)
- Make new BBs generic enough that they could be reused in other flows (request from Seshu)
- Service-Macro-Delete
    - **Should we delete PNF resource from AAI on service deletion?**
        - **We plan to leave it. What orchestration status should it get? Inactive?**