



SO Requirements in R6 PNF SW Upgrade & 5G NRM Configuration

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Summary

- PNF SW Upgrade
 - Contributed by Huawei and Ericsson
 - Wiki: <https://wiki.onap.org/display/DW/PNF+software+upgrade+in+R6+Frankfurt>
 - Requirements in SO:
 - SO API extension to retrieve PNF workflow: [SO-2540](#)
 - SO API to support custom PNF workflow, like software upgrade (shall be generic enough to support execution of PNF-level workflow): [SO-2071](#)
 - Others, such as BBs, a generic decision point, etc.
- 5G NRM Configuration
 - Contributed by Huawei
 - Wiki: <https://wiki.onap.org/display/DW/5G+Network+Resource+Model+%28NRM%29+Configuration+in+R6+Frankfurt>
 - Requirements in SO:
 - Based on the requirements as above case, ***NO* additional new SO API impacts.**
 - One BB or custom workflow for RAN PNF configuration (create network resource)
 - Three custom workflow for get/modify/delete operations



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PNF SW upgrade case

Req-1 (API req): SO API extension to retrieve PNF workflow (SO-2540)

- GET

/onap/so/infra/workflowSpecifications/{version:[vV][1]}/workflows?pnfModelVersionId={UUID}

- Path Parameters

- version: String, Required
- pnfModelVersionId: String, Required

- pnfModelVersionId is the uuid of pnf resource.

```
@Path("onap/so/infra/workflowSpecifications")
@OpenAPIDefinition(info = @Info(title = "onap/so/infra/workflowSpecifications",
    description = "Queries of Workflow Specifications"))
@Component
public class WorkflowSpecificationsHandler {

    @Autowired
    private ResponseBuilder builder;

    @Autowired
    private CatalogDbClient catalogDbClient;

    private static Logger logger = LoggerFactory.getLogger(WorkflowSpecificationsHandler.class);
    private static final String ARTIFACT_TYPE_WORKFLOW = "workflow";
    private static final String NATIVE_WORKFLOW = "native";

    @Path("/{version:[vV]1}/workflows")
    @GET
    @Operation(description = "Finds Workflow Specifications", responses = @ApiResponse(
        content = @Content(array = @ArraySchema(schema = @Schema(implementation = Response.class))))
    @Transactional

    public Response queryWorkflowSpecifications(@QueryParam("vnfModelVersionId") String vnfModelVersionId,
        @PathParam("version") String version) throws Exception {
```

Existing one for VNF

Req-2(API req): SO API to support custom PNF software upgrade workflow (SO-2071)

- POST

`https://{serverRoot}/{apiRoot}/{version:[vV][1]}/serviceInstances/{serviceInstanceId}/pnfs/{pnfInstanceId}/workflows/{workflowUuid}`

- `serverRoot` = `https://{FQDN}:{Port}`
- `apiRoot` = `onap/so/infra/instanceManagement`

- Path Parameters

- `version`: String, Required
- `serviceInstanceId`: String, Required
- `pnfInstanceId`: String, Required
- `workflowUuid`: String, Required

- Body parameters

- Body: String, Required
(“requestDetails” is mandatory)

```
@Path("/onap/so/infra/instanceManagement")
@OpenAPIDefinition(info = @Info(title = "/onap/so/infra/instanceManagement",
    description = "Infrastructure API Requests for Instance Management"))
public class InstanceManagement {

    private static Logger logger = LoggerFactory.getLogger(InstanceManagement.class);
    private static String uriPrefix = "/instanceManagement/";
    private static final String SAVE_TO_DB = "save instance to db";

    @Autowired
    private RequestsDbClient infraActiveRequestsClient;

    @Autowired
    private CatalogDbClient catalogDbClient;

    @Autowired
    private MsoRequest msoRequest;

    @Autowired
    private RequestHandlerUtils requestHandlerUtils;

    @POST
    @Path("/{version:[vV][1]}/serviceInstances/{serviceInstanceId}/pnfs/{pnfInstanceId}/workflows/{workflowUuid}")
    @Consumes(MediaType.APPLICATION_JSON)
    @Produces(MediaType.APPLICATION_JSON)
    @Operation(description = "Execute custom workflow", responses = @ApiResponse(
        content = @Content(array = @ArraySchema(schema = @Schema(implementation = Response.class))))))
    @Transactional
    public Response executeCustomWorkflow(String request, @PathParam("version") String version,
        @PathParam("serviceInstanceId") String serviceInstanceId, @PathParam("pnfInstanceId") String pnfInstanceId,
        @PathParam("workflowUuid") String workflowUuid, @Context ContainerRequestContext requestContext)
```

Existing one for VNF

Body parameters for custom PNF SW Upgrade workflow

Field Name	Format	Mandatory	Examples	Notes
{				Root object
“requestDetails ”: {	Object	M		Contains all relevant request information if any inputs were required for the chosen workflowSpecification (workflowUuid)
“requestParameters”: {	Object	M		Contains all relevant request parameters
“userParams”:[Array	M		Contains all relevant user parameters with key-value pairs
{“name”:	String	M	“targetSoftwareVersion”	The key of user parameter
“value”: }	String	M	“v2”	The value of user parameter
]				
“payload”: “xxx”	String	O		If specified, shall be parsed as json.
}				End of requestParameters
}				End of requestDetails
}				Root object end



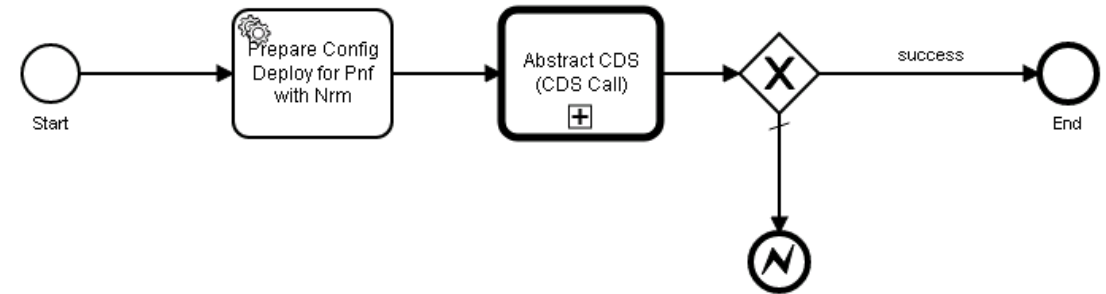
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5G NRM configuration case

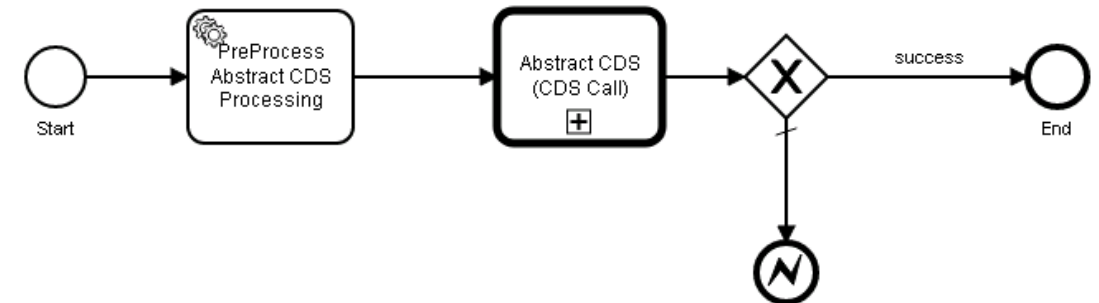
Req-1: Create NRM resources for RAN PNF

- **Option 1 (WF):** A process which can be triggered by PNF Workflow Orchestration Request



- BPMN name: **ConfigureRANPnfNrmResource.bpmn**
- Target Location: so/bpmn/so-bpmn-infrastructure-flows/src/main/resources/process

- **Option 2 (BB):** A BB which could be linked after PNF PnP and Post instantiation request

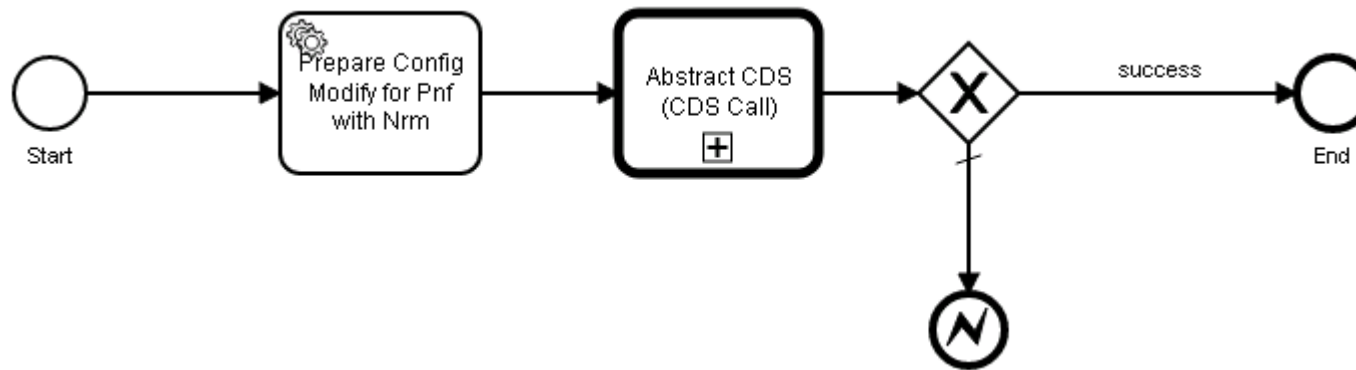


- BPMN name: **ConfigDeployPnfBB.bpmn**
- Target Location: so/bpmn/so-bpmn-building-blocks/src/main/resources/subprocess/BuildingBlock

- **Note:** If the generic pnf pnp workflow refactoring has good progress, Option 2 is preferred.
- **Note:** AbstractCDSProcessingBB can be re-used for two options.

Req-2: custom workflow for get/modify/delete operations

- Add new specific workflows:
 - modifyRANPnfNrmResource.bpmn --call config-modify via SS API
 - deleteRANPnfNrmResource.bpmn --call config-delete via SS API
 - queryRANPnfNrmResource.bpmn --call config-get via SS API



- Target Location: so/bpmn/so-bpmn-infrastructure-flows/src/main/resources/process
- Note: For these three operations, **custom workflow option is preferred.**

Body parameters for PNF NRM configuration (option 1: WF)

Field Name	Format	Mandatory	Examples	Notes
{				
“requestDetails ”: {	Object	M		
“requestParameters”: {	Object	M		
“userParams”:[Array	M		Contains all relevant user parameters with key-value pairs
{“name”:	String	M	“blueprintName”	
“value”: },	String	M	“bp-HW-pnf”	
{“name”:	String	M	“blueprintVersion”	
“value”: }	String	M	“1.0.0”	
]				
“payload”: “xxx”	String	M	“[{\ “GNBDUFunction\” :{\ “gNBId\”:1, \ “gNBDUId\”:5}\}”	Contains all MOIs for CM
}				End of requestParameters
}				End of requestDetails
}				Root object end

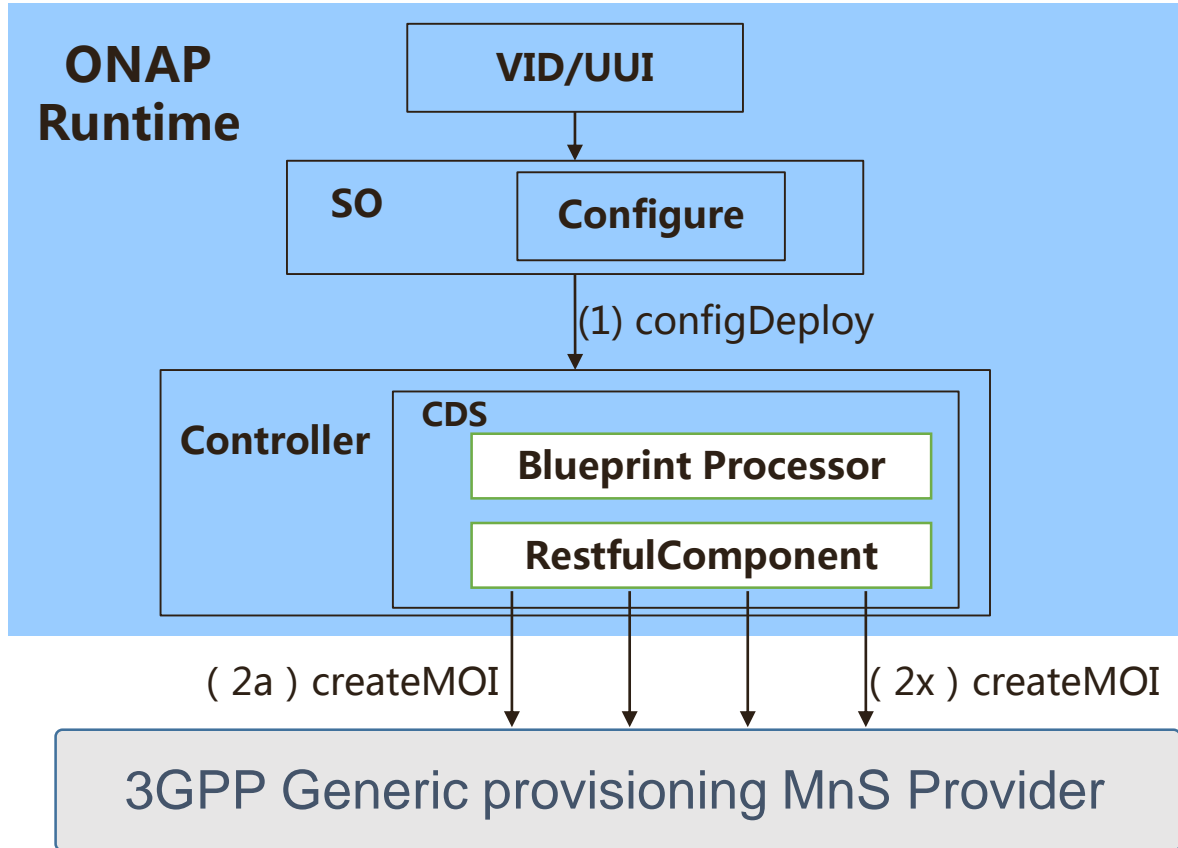


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Thank You!

Idea: Integration of ONAP with 3GPP NRM configuration



Step 1 (SO-Controller) in R4

```

{
  "actionIdentifiers": {
    "actionName": "config-assign",
    "blueprintName": "configuration_over_restconf",
    "blueprintVersion": "1.0.0",
    "mode": "sync"
  },
  "commonHeader": {
    "originatorId": "sdnc",
    "requestId": "123456-1000",
    "subRequestId": "sub-123456-1000"
  },
  "payload": {
    "config-assign-request": {
      "resolution-key": "RES-KEY 4",
      "config-assign-properties": {
        "service-instance-id": "siid_1234",
        "pnf-id": "netopeer2",
        "pnf-name": "10.149.89.217",
        "service-model-uuid": "service-model-uuid",
        "pnf-customization-uuid": "pnf-customization-uuid"
      }
    }
  }
}
    
```

R6 :
 config-deploy/config-modify
 /config-get/config-delete
 restful

managed-object-instances:
"GNBDUFunction" : [
 { "gNBId" :1, "gNBDUIId" :5},
 { "gNBId" :2, "gNBDUIId" :6},
 {}],
"GNBCUCPFunction" : [
 { "gNBId" :1, " " gNBCUName" : " " cu-1" },
 { "gNBId" :2, " " gNBCUName" : " " cu-2" },
],
"GNBCUUPFunction" : [{}]

Step 2a–2x: NRM configuration request to provisioning MnS provider (Ref [6])

IS operation	HTTP Method	Resource URI	Qualifier
createMOI	PUT	/ {className} / {id}	M
getMOIAttributes	GET	/ {className} / {id}	M
modifyMOIAttributes	PATCH	/ {className} / {id}	M
deleteMOI	DELETE	/ {className} / {id}	M