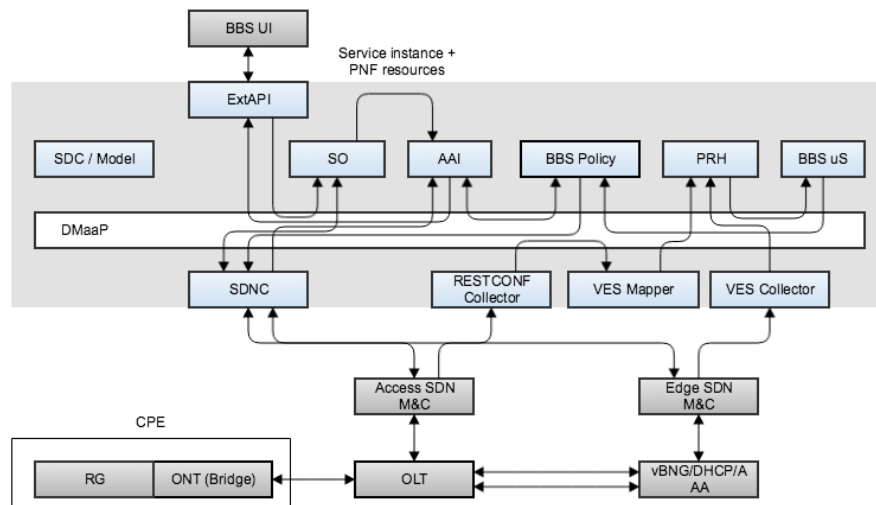


BBS Documentation (Dublin)

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System View



System Set up

SO

Custom Workflow Configuration

SO Custom Workflow Configuration

```
~/oom/kubernetes# kubectl edit cm dev-so-so-bpmn-infra-app-configmap

mso:
...
  oof:
    auth: test:testpwd
    callbackEndpoint: http://so-bpmn-infra.onap:8081/mso/WorkflowMessage
    endpoint: https://oof-osdf.onap:8698/api/oof/v1/placement
    timeout: PT30M
  workflow:
+   custom:
+     BBS_E2E_Service:
+       sdnc:
+         need: true
    CreateGenericVNFV1:
      aai:
        volume-group:
          uri: /aai/v6/cloud-infrastructure/volume-groups/volume-group
      default:
        aai:
...

## Restart the pod
~/oom/kubernetes# kubectl delete po dev-so-so-bpmn-infra-7556d7f6bc-8fthk
```

Mapping between resource model and BPMN template: [SO : How it works between API and BPMN](#)

As shown below, **new entries** need to be inserted manually in SO database (mariadb-galera) in order to map a given resource model to a specific BPMN recipe. For instance, the CPE is modeled in SDC as a VF but it is treated as PNF resource by SO by using the handlePNF BPMN recipe. Those entries need to be inserted in **catalogdb database > vnf_recipe table**.

IMPORTANT: make sure **vnf_recipe.NF_ROLE** matches **vnf_resource.MODEL_NAME**, and **vnf_recipe.VERSION_STR** matches **vnf_resource.MODEL_VERSION**.

```

root@onap-rancher-daily:/home/ubuntu# kubectl exec -ti dev-mariadb-galera-mariadb-galera-0 sh
sh-4.2$ mysql -u root -p
MariaDB [(none)]> use catalogdb;
MariaDB [catalogdb]> select * from vnf_recipe;
...
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| id      | NF_ROLE           | ACTION           | SERVICE_TYPE | VERSION_STR | DESCRIPTION |
+-----+-----+-----+-----+-----+-----+
| 10043   | InternetProfile   | createInstance   | NF           | 1.0         | InternetProfile
ORCHESTRATION_URI | VNF_PARAM_XSD | RECIPE_TIMEOUT | CREATION_TIMESTAMP |
VF_MODULE_ID
+-----+-----+-----+-----+-----+-----+
| 10043   | InternetProfile   | createInstance   | NF           | 1.0         | InternetProfile
/mso/async/services
/CreatesDNCNetworkResource | NULL          | 180000 | 2019-02-18 08:34:39 |
NULL
+-----+-----+-----+-----+-----+-----+
| 10044   | AccessConnectivity | createInstance   | NF           | 1.0         | AccessConnectivity
/mso/async/services
/CreatesDNCNetworkResource | NULL          | 180000 | 2019-02-18 08:34:39 |
NULL
+-----+-----+-----+-----+-----+-----+
| 10045   | CPE               | createInstance   | NF           | 1.0         | CPE
/mso/async/services
/HandlePNF | NULL          | 180000 | 2019-02-18 08:34:39 |
NULL
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
...
MariaDB [catalogdb]> select * from vnf_resource;
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| ORCHESTRATION_MODE | DESCRIPTION           | CREATION_TIMESTAMP | MODEL_UUID |
+-----+-----+-----+-----+-----+-----+
| AIC_VERSION_MIN    | AIC_VERSION_MAX      | MODEL_INVARIANT_UUID | MODEL_VERSION | MODEL_NAME |
+-----+-----+-----+-----+-----+-----+
| TOSCA_NODE_TYPE    | HEAT_TEMPLATE_ARTIFACT_UUID | RESOURCE_CATEGORY |
+-----+-----+-----+-----+-----+-----+
| RESOURCE_SUB_CATEGORY |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
| HEAT              | CPE VF               | 2019-05-15 22:11:07 | 8f5fe623-c5e3-4ab3-90f9-3a28daea6601 |
NULL              | NULL                | 0ee07fe6-a156-4e59-9dee-09a775d02bca | 1.0 | CPE |
org.openecomp.resource.vf.Cpe | NULL | Generic |
Infrastructure |
+-----+-----+-----+-----+-----+-----+
| HEAT              | InternetProfile VF   | 2019-05-15 22:11:11 | a8de16d8-0d1a-4a19-80ac-2bcb2790e9a6 |
NULL              | NULL                | acbe6358-6ce4-43a9-9385-111fe5cadad3 | 1.0 | InternetProfile |
org.openecomp.resource.vf.Internetprofile | NULL | Generic |
Infrastructure |
+-----+-----+-----+-----+-----+-----+
| HEAT              | AccessConnectivity VF | 2019-05-15 22:11:13 | b464fd87-3663-46c9-adc5-6f7d9e98ff26 |
NULL              | NULL                | 53018dba-c934-415d-b4b1-0b1cae9553b8 | 1.0 | AccessConnectivity |
org.openecomp.resource.vf.Accessconnectivity | NULL | Generic |
Infrastructure |
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+

```

Modify the MODEL_UUID and MODEL_INVARIANT_UUID for each resource in the SQL query below accordingly to your environment.

```
INSERT INTO `vnf_resource` (`ORCHESTRATION_MODE`, `DESCRIPTION`, `CREATION_TIMESTAMP`, `MODEL_UUID`,
`AIC_VERSION_MIN`, `AIC_VERSION_MAX`, `MODEL_INVARIANT_UUID`, `MODEL_VERSION`, `MODEL_NAME`, `TOSCA_NODE_TYPE`,
`HEAT_TEMPLATE_ARTIFACT_UUID`, `RESOURCE_CATEGORY`, `RESOURCE_SUB_CATEGORY`)
VALUES
('HEAT', 'CPE VF', '2019-05-15 22:11:07', '8f5fe623-c5e3-4ab3-90f9-3a28daea6601', NULL, NULL, '0ee07fe6-
a156-4e59-9dee-09a775d02bca', '1.0', 'CPE', 'org.openecomp.resource.vf.Cpe', NULL, 'Generic', 'Infrastructure'),
('HEAT', 'InternetProfile VF', '2019-05-15 22:11:11', 'a8de16d8-0d1a-4a19-80ac-2bcb2790e9a6', NULL,
NULL, 'acbe6358-6ce4-43a9-9385-111fe5cadad3', '1.0', 'InternetProfile', 'org.openecomp.resource.vf.
Internetprofile', NULL, 'Generic', 'Infrastructure'),
('HEAT', 'AccessConnectivity VF', '2019-05-15 22:11:13', 'b464fd87-3663-46c9-adc5-6f7d9e98ff26', NULL,
NULL, '53018dba-c934-415d-b4b1-0blcae9553b8', '1.0', 'AccessConnectivity', 'org.openecomp.resource.vf.
Accessconnectivity', NULL, 'Generic', 'Infrastructure');
```

Adding is_pnf flag to CPE resource input in catalogdb database. Needed in DoCreateResource BPMN for pausing the flow until a PNF is ready

```
INSERT INTO `vnf_resource_customization` (`ID`, `MODEL_CUSTOMIZATION_UUID`, `MODEL_INSTANCE_NAME`,
`MIN_INSTANCES`, `MAX_INSTANCES`, `AVAILABILITY_ZONE_MAX_COUNT`, `NF_TYPE`, `NF_ROLE`, `NF_FUNCTION`,
`NF_NAMING_CODE`, `MULTI_STAGE_DESIGN`, `CREATION_TIMESTAMP`, `VNF_RESOURCE_MODEL_UUID`, `SERVICE_MODEL_UUID`,
`RESOURCE_INPUT`, `CDS_BLUEPRINT_NAME`, `CDS_BLUEPRINT_VERSION`, `SKIP_POST_INSTANTIATION_CONFIGURATION`)
VALUES
(16, '0cealcea-e4e4-4c91-be41-675e183a8983', 'CPE 0', NULL, NULL, NULL, NULL, NULL, NULL, NULL,
'false', '2019-05-21 11:15:42', '8f5fe623-c5e3-4ab3-90f9-3a28daea6601', '0187be8c-8efb-4531-97fa-dbe984ed9cdb',
'{\\\\"nf_naming\\\\":\\\\"true\\\\"', '\\\\"skip_post_instantiation_configuration\\\\":\\\\"true\\\\"', '\\\\"
multi_stage_design\\\\":\\\\"false\\\\"', '\\\\"availability_zone_max_count\\\\":\\\\"1\\\\"', '\\\\"is_pnf\\\\":\\\\"
ont_0_is_pnf|true\\\\"}', NULL, NULL, 1),
(19, '23084710-92d1-433f-9ee8-1ab6b52968e4', 'AccessConnectivity 0', NULL, NULL, NULL, NULL, NULL, NULL,
NULL, 'false', '2019-07-10 11:15:42', '36f3f843-5592-42d3-a873-c9ab6a404742', 'b70a200b-53a9-46ef-b920-
f386d8fad8c3', '{\\\\"nf_naming\\\\":\\\\"true\\\\"', '\\\\"skip_post_instantiation_configuration\\\\":\\\\"true\\\\"', '\\\\"
multi_stage_design\\\\":\\\\"false\\\\"', '\\\\"availability_zone_max_count\\\\":\\\\"1\\\\"}', NULL, NULL, 1),
(22, 'a10e2b3d-4454-4e77-867c-7ce5076bd9c2', 'InternetProfile 0', NULL, NULL, NULL, NULL, NULL, NULL,
'false', '2019-07-10 11:16:42', 'd9c46bd0-8847-407e-a9bd-1e58c369d6c1', 'b70a200b-53a9-46ef-b920-f386d8fad8c3',
'{\\\\"nf_naming\\\\":\\\\"true\\\\"', '\\\\"skip_post_instantiation_configuration\\\\":\\\\"true\\\\"', '\\\\"
multi_stage_design\\\\":\\\\"false\\\\"', '\\\\"availability_zone_max_count\\\\":\\\\"1\\\\"}', NULL, NULL, 1);
```

We need to ensure that the order in which the resources are processed by SO engine is correct. In BBS case, the PNF resource should go right after VnfVirtualLink (NOTE: the BPMN flow waits until PNF is ready in order to create AccessConnectivity and InternetProfile resources)

```
MariaDB [catalogdb]> select RESOURCE_ORDER from service where MODEL_NAME="BBS_E2E_Service";
+-----+
| RESOURCE_ORDER |
+-----+
| VnfVirtualLink,CPE,AccessConnectivity,InternetProfile,PonUni,OltNni,OntNni |
| VnfVirtualLink,CPE,AccessConnectivity,InternetProfile,PonUni,OltNni,OntNni |
+-----+
2 rows in set (0.00 sec)
```

SO Database Workaround

Currently, the existing RESOURCE ORDER displayed above for the service requires the VNF-Virtual-link to be orchestrated first. Due to missing functionality in DGs to handle this orchestration for the ODN network (modeled as VNF-Virtual-Link) in BBS use case, we need to delete a database entry so that service decomposition does not contain any VNF virtual links that need to be orchestrated.

```
MariaDB [catalogdb]> delete from network_resource_customization_to_service where SERVICE_MODEL_UUID="
<put-here-the-service-model-UUID>;
```

DMaaP Message Router

Create required topics

unauthenticated.DCAE_CL_OUTPUT

```
curl -X POST \
  http://mr.api.simplesdemo.openecomp.org:30227/topics/create \
  -H 'Accept: application/json' \
  -H 'Content-Type: application/json' \
  -H 'cache-control: no-cache' \
  -d '{
    "topicName": "unauthenticated.DCAE_CL_OUTPUT",
    "topicDescription": "",
    "partitionCount": "",
    "replicationCount": "3"
  },'
```

unauthenticated.CPE_AUTHENTICATION

```
curl -X POST \
  http://mr.api.simplesdemo.openecomp.org:30227/topics/create \
  -H 'Accept: application/json' \
  -H 'Content-Type: application/json' \
  -H 'cache-control: no-cache' \
  -d '{
    "topicName": "unauthenticated.CPE_AUTHENTICATION",
    "topicDescription": "",
    "partitionCount": "",
    "replicationCount": "3"
  },'
```

unauthenticated.PNF_READY

```
curl -X POST \
  http://mr.api.simplesdemo.openecomp.org:30227/topics/create \
  -H 'Accept: application/json' \
  -H 'Content-Type: application/json' \
  -H 'cache-control: no-cache' \
  -d '{
    "topicName": "unauthenticated.PNF_READY",
    "topicDescription": "",
    "partitionCount": "",
    "replicationCount": "3"
  },'
```

unauthenticated.PNF_UPDATE

```
curl -X POST \
  http://mr.api.simplesdemo.openecomp.org:30227/topics/create \
  -H 'Accept: application/json' \
  -H 'Content-Type: application/json' \
  -H 'cache-control: no-cache' \
  -d '{
    "topicName": "unauthenticated.PNF_UPDATE",
    "topicDescription": "",
    "partitionCount": "",
    "replicationCount": "3"
  },'
```

DCAE

PNF Registration Handler (PRH)

Update dcae-prh config in Consul

dcae-prh config

```
{
  "dmaap.dmaapUpdateProducerConfiguration.dmaapPortNumber": 3904,
  "security.trustStorePath": "/opt/app/prh/etc/cert/trust.jks",
  "dmaap.dmaapProducerConfiguration.dmaapTopicName": "/events/unauthenticated.PNF_READY",
  "dmaap.dmaapConsumerConfiguration.dmaapHostName": "message-router",
  "streams_subscribes": {
    "ves-reg-output": {
      "type": "message_router",
      "dmaap_info": {
        "topic_url": "http://message-router:3904/events/unauthenticated.VES_PNFREG_OUTPUT"
      }
    }
  },
  "security.enableAaiCertAuth": false,
  "dmaap.dmaapConsumerConfiguration.dmaapUrl": "http://message-router:3904/events/unauthenticated.VES_PNFREG_OUTPUT",
  "dmaap.dmaapProducerConfiguration.dmaapUserPassword": "admin",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapTopicName": "/events/unauthenticated.PNF_UPDATE",
  "aai.aaiClientConfiguration.aaiUserPassword": "AAI",
  "dmaap.dmaapConsumerConfiguration.dmaapUserName": "admin",
  "security.trustStorePasswordPath": "/opt/app/prh/etc/cert/trust.pass",
  "aai.aaiClientConfiguration.aaiBasePath": "/aai/v12",
  "dmaap.dmaapProducerConfiguration.dmaapUrl": "http://message-router:3904/events/unauthenticated.PNF_READY",
  "dmaap.dmaapProducerConfiguration.dmaapPortNumber": 3904,
  "aai.aaiClientConfiguration.aaiHost": "aai",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapContentType": "application/json",
  "aai.aaiClientConfiguration.aaiServiceInstancePath": "/business/customers/customer/${customer}/service-subscriptions/service-subscription/${serviceType}/service-instances/service-instance/${serviceInstanceId}",
  "dmaap.dmaapConsumerConfiguration.dmaapUserPassword": "admin",
  "security.keyStorePath": "/opt/app/prh/etc/cert/key.p12",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapUrl": "http://message-router:3904/events/unauthenticated.PNF_UPDATE",
  "dmaap.dmaapProducerConfiguration.dmaapProtocol": "http",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapProtocol": "http",
  "aai.aaiClientConfiguration.aaiIgnoreSslCertificateErrors": true,
  "security.enableDmaapCertAuth": false,
  "dmaap.dmaapUpdateProducerConfiguration.dmaapUserPassword": "admin",
  "aai.aaiClientConfiguration.pnfUrl": "https://aai:8443/aai/v12/network/pnfs/pnf",
  "dmaap.dmaapConsumerConfiguration.dmaapTopicName": "events/unauthenticated.VES_PNFREG_OUTPUT",
  "dmaap.dmaapConsumerConfiguration.dmaapProtocol": "http",
  "dmaap.dmaapConsumerConfiguration.dmaapPortNumber": 3904,
  "dmaap.dmaapConsumerConfiguration.consumerId": "c12",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapUserName": "admin",
  "dmaap.dmaapConsumerConfiguration.dmaapContentType": "application/json",
  "dmaap.dmaapConsumerConfiguration.messageLimit": -1,
  "dmaap.dmaapProducerConfiguration.dmaapContentType": "application/json",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapHostName": "message-router",
  "streams_publishes": {
    "pnf-update": {
      "type": "message_router",
      "dmaap_info": {
        "topic_url": "http://message-router:3904/events/unauthenticated.PNF_UPDATE"
      }
    },
    "pnf-ready": {
      "type": "message_router",
      "dmaap_info": {
        "topic_url": "http://message-router:3904/events/unauthenticated.PNF_READY"
      }
    }
  },
  "dmaap.dmaapConsumerConfiguration.consumerGroup": "OpenDCAE-c12",
  "security.keyStorePasswordPath": "/opt/app/prh/etc/cert/key.pass",
  "aai.aaiClientConfiguration.aaiUserName": "AAI",
  "aai.aaiClientConfiguration.aaiPnfPath": "/network/pnfs/pnf",
  "dmaap.dmaapProducerConfiguration.dmaapHostName": "message-router",
  "aai.aaiClientConfiguration.aaiHeaders": {
    "X-FromAppId": "prh",
    "X-TransactionId": "9999",
    "Accept": "application/json",
    "Authorization": "Basic QUFJOkFBQS==",
    "Real-Time": "true"
  },
  "aai.aaiClientConfiguration.aaiHostPortNumber": 8443,
  "dmaap.dmaapConsumerConfiguration.timeoutMs": -1,
  "aai.aaiClientConfiguration.aaiProtocol": "https",
  "dmaap.dmaapProducerConfiguration.dmaapUserName": "admin"
}
```

SERVICES

NODES

KEY/VALUE

ACL

DC1

+

dcae-dashboard

dcae-hv-ves-collector

dcae-prh

dcae-snmpt-trap-collector

dcae-tca-analytics

dcae-ves-collector

dcaeegen2-collectors-rc

deployment_handler

holmes-engine-mgmt

holmes-rule-mgmt

k8s-plugin

policy_handler

s4d51b24f52264857b7ef520be9efc46b-bbs-event-processor

sca060ba58d274972ba3aa9dfabae46-dcaeegen2-svc-mapper

dcae-prh

```
{
  "dmaap.dmaapUpdateProducerConfiguration.dmaapPortNumber": 3904,
  "security.trustStorePath": "/opt/app/prh/etc/cert/trust.jks",
  "dmaap.dmaapProducerConfiguration.dmaapTopicName": "/events/unauthenticated.PNF_READY",
  "dmaap.dmaapConsumerConfiguration.dmaapHostName": "message-router",
  "streams_subscribes": {
    "ves-reg-output": {
      "type": "message_router",
      "dmaap_info": {
        "topic_url": "http://message-router:3904/events/unauthenticated.VES_PNFREG_OUTPUT"
      }
    }
  },
  "security.enableAaiCertAuth": false,
  "dmaap.dmaapConsumerConfiguration.dmaapUrl": "http://message-router:3904/events/unauthenticated.VES_PNFREG_OUTPUT",
  "dmaap.dmaapProducerConfiguration.dmaapUserPassword": "admin",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapTopicName": "/events/unauthenticated.PNF_UPDATE",
  "aai.aaiClientConfiguration.aaiUserPassword": "AAI",
  "dmaap.dmaapConsumerConfiguration.dmaapUserName": "admin",
  "security.trustStorePasswordPath": "/opt/app/prh/etc/cert/trust.pass",
  "aai.aaiClientConfiguration.aaiBasePath": "/aai/v12",
  "dmaap.dmaapProducerConfiguration.dmaapUrl": "http://message-router:3904/events/unauthenticated.PNF_READY",
  "dmaap.dmaapProducerConfiguration.dmaapPortNumber": 3904,
  "aai.aaiClientConfiguration.aaiHost": "aai",
  "dmaap.dmaapUpdateProducerConfiguration.dmaapContentType": "application/json",
  "aai.aaiClientConfiguration.aaiServiceInstancePath": "/business/customers/customer/${customer}/service-subscriptions/service-subscription/${serviceType}/service-instances/service-instance/${serviceInstanceId}",
  "dmaap.dmaapConsumerConfiguration.dmaapUserPassword": "admin",
  "security.keyStorePath": "/opt/app/prh/etc/cert/key.p12"
}
```

UPDATE

CANCEL

☐ VALIDATE JSON

DELETE KEY

BBS Event Processor (BBS-ep)

BBS-EventProcessor Service (BBS Usecase)

BBSep deployment

```
~/oom/kubernetes# kubectl exec -ti dev-dcae-gen2-dcae-bootstrap-85f664d489-54pmt bash
[root@dev-dcae-gen2-dcae-bootstrap-779767c49c-7cvdw /]# cfy blueprints validate /blueprints/k8s-bbs-event-processor.yaml
Validating blueprint: /blueprints/k8s-bbs-event-processor.yaml
Blueprint validated successfully
[root@dev-dcae-gen2-dcae-bootstrap-779767c49c-7cvdw /]# cfy blueprints upload -b bbs-ep /blueprints/k8s-bbs-event-processor.yaml
Uploading blueprint /blueprints/k8s-bbs-event-processor.yaml...
  k8s-bbs-event-pro... |#####| 100.0%
Blueprint uploaded. The blueprint's id is bbs-ep
[root@dev-dcae-gen2-dcae-bootstrap-779767c49c-7cvdw /]# cfy deployments create -b bbs-ep -i /bbs-event-processor-input.yaml bbs-ep
Creating new deployment from blueprint bbs-ep...
Deployment created. The deployment's id is bbs-ep
[root@dev-dcae-gen2-dcae-bootstrap-779767c49c-7cvdw /]# cfy executions start -d bbs-ep install
Executing workflow install on deployment bbs-ep [timeout=900 seconds]
2020-01-13 14:51:54.483 CFY <bbs-ep> Starting 'install' workflow execution
2020-01-13 14:51:55.063 CFY <bbs-ep> [bbs-event-processor_qcbwi6] Creating node instance
2020-01-13 14:51:55.063 CFY <bbs-ep> [bbs-event-processor_qcbwi6.create] Sending task 'k8splugin.create_for_components'
2020-01-13 14:51:59.059 LOG <bbs-ep> [bbs-event-processor_qcbwi6.create] INFO: Done setting up: sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor
2020-01-13 14:51:58.529 LOG <bbs-ep> [bbs-event-processor_qcbwi6.create] INFO: Added config for sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor
2020-01-13 14:51:59.059 CFY <bbs-ep> [bbs-event-processor_qcbwi6.create] Task succeeded 'k8splugin.create_for_components'
2020-01-13 14:51:59.059 CFY <bbs-ep> [bbs-event-processor_qcbwi6] Node instance created
2020-01-13 14:51:59.705 CFY <bbs-ep> [bbs-event-processor_qcbwi6] Configuring node instance: nothing to do
2020-01-13 14:51:59.705 CFY <bbs-ep> [bbs-event-processor_qcbwi6] Starting node instance
2020-01-13 14:51:59.705 CFY <bbs-ep> [bbs-event-processor_qcbwi6.start] Sending task 'k8splugin.create_and_start_container_for_components'
2020-01-13 14:52:01.122 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: Starting k8s deployment for sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor, image: nexus3.onap.org:10001/onap/org.onap.dcae-gen2-services.components.bbs-event-processor:1.0.0, env: {'CONSUL_HOST': 'u'consul-server.onap', 'SERVICE_TAGS': 'bbs-ep', 'CONFIG_BINDING_SERVICE': 'config-binding-service'}, kwargs: {'readiness': {'u'endpoint': 'u'/heartbeat', 'u'type': 'u'http', 'u'timeout': 'u'5s', 'u'interval': 'u'180s'}, 'labels': {'cfydeployment': 'u'bbs-ep', 'cfynodeinstance': 'u'bbs-event-processor_qcbwi6', 'cfynode': 'u'bbs-event-processor'}, 'tls_info': {'u'use_tls': True, 'u'cert_directory': 'u'/opt/app/bbs-event-processor/etc/cert'}, 'envs': {'SERVICE_TAGS': 'bbs-ep', 'liveness': {}, 'resource_config': {}, 'volumes': [], 'log_info': {'u'log_directory': 'u'/opt/app/bbs-event-processor/logs'}, 'ports': ['u'8100:30810'], 'k8s_location': 'u'central'}
2020-01-13 14:52:01.837 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: Passing k8sconfig: {'tls': {'u'cert_path': 'u'/opt/tls/shared', 'u'image': 'u'nexus3.onap.org:10001/onap/org.onap.dcae-gen2.deployments.tls-init-container:1.0.3', 'u'ca_cert_configmap': 'u'dev-dcae-gen2-dcae-bootstrap-dcae-cacert', 'u'component_ca_cert_path': 'u'/opt/dcae/cacert/cacert.pem'}, 'filebeat': {'u'config_map': 'u'dcae-filebeat-configmap', 'u'config_path': 'u'/usr/share/filebeat/filebeat.yml', 'u'log_path': 'u'/var/log/onap', 'u'image': 'u'docker.elastic.co/beats/filebeat:5.5.0', 'u'data_path': 'u'/usr/share/filebeat/data', 'u'config_subpath': 'u'filebeat.yml'}, 'consul_dns_name': 'u'consul-server.onap', 'image_pull_secrets': ['u'onap-docker-registry-key'], 'namespace': 'u'onap', 'consul_host': 'consul-server:8500', 'default_k8s_location': 'u'central'}
2020-01-13 14:52:01.837 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: k8s deployment initiated successfully for sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor: {'services': ['sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor', 'xsd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor'], 'namespace': 'u'onap', 'location': 'u'central', 'deployment': 'dep-sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor'}
2020-01-13 14:52:01.837 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: Waiting up to 1800 secs for sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor to become ready
2020-01-13 14:54:45.054 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: k8s deployment is ready for: sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor
2020-01-13 14:54:45.586 LOG <bbs-ep> [bbs-event-processor_qcbwi6.start] INFO: Done starting: sd23a0f76c0bf4489b2c221cf88f8af4f-bbs-event-processor
2020-01-13 14:54:45.586 CFY <bbs-ep> [bbs-event-processor_qcbwi6.start] Task succeeded 'k8splugin.create_and_start_container_for_components'
2020-01-13 14:54:45.586 CFY <bbs-ep> [bbs-event-processor_qcbwi6] Node instance started
2020-01-13 14:54:46.303 CFY <bbs-ep> 'install' workflow execution succeeded
Finished executing workflow install on deployment bbs-ep
* Run 'cfy events list -e 08ad7324-4899-4c8e-b84f-6f198e873af1' to retrieve the execution's events/logs
```

Update the configuration of BBS-ep in Consul with the following version for close loop (see screenshot below) in order to match the version expected by BBS APEX policy:

"application.clVersion": "1.0.0"

+

SERVICES

NODES

KEY/VALUE

ACL

DC1

⚙

/ +

dcae-dash-board

dcae-hv-ves-collector

dcae-prh

dcae-snmptap-collector

dcae-tca-analytics

dcae-ves-collector

dcaeagen2-collectors-proxyaccess

dcaeagen2-collectors-rc

deployment_handler

holmes-engine-mgmt

holmes-rule-mgmt

k8s-plugin

policy_handler

s2ca731a292304c1ea340310d377ecff-dcaeagen2-svc-mapper

sb41661974b3246509ef0e2545b0d8d37-bbs-event-processor

sb41661974b3246509ef0e2545b0d8d37-bbs-event-processor

```
{
  "application.cpe.authentication.policyScope": "policyScopeCpeAuth",
  "dmaap.contentType": "application/json",
  "application.ssl.enableAaiCertAuth": true,
  "application.policyVersion": "1.0.0.5",
  "dmaap.consumer.consumerGroup": "OpenDcae-cl2",
  "streams_subscribes": {
    "cpe_authentication": {
      "type": "message_router",
      "aaf_password": "admin",
      "dmaap_info": {
        "topic_url": "http:message-router:3904/events/unauthenticated.CPE_AUTHENTICATION",
        "aaf_username": "admin",
        "pnf_reregistration": {
          "type": "message_router",
          "aaf_password": "admin",
          "dmaap_info": {
            "topic_url": "http:message-router:3904/events/unauthenticated.PNF_UPDATE",
            "aaf_username": "admin"
          }
        }
      }
    },
    "application.ssl.keyStorePath": "/opt/app/bbs-event-processor/etc/cert/cert.jks",
    "application.clTarget": "vservr.vsn",
    "name": "aai.host": "aai.onap",
    "aai.password": "AAI",
    "aai.username": "AAI",
    "dmaap.timeoutMs": -1,
    "aai.port": 8443,
    "application.cbsPollingIntervalSec": 120,
    "application.cpeAuth.configKey": "cpe_authentication",
    "application.clTargetType": "V",
    "application.ssl.keyStorePasswordPath": "/opt/app/bbs-event-processor/etc/cert/jks.pas",
    "streams_publishes": {
      "close_loop": {
        "type": "message_router",
        "aaf_password": "admin",
        "dmaap_info": {
          "topic_url": "http:message-router:3904/events/unauthenticated.DCAE_CL_OUTPUT",
          "aaf_username": "admin"
        }
      },
      "application.pipelinesPollingIntervalSec": 30,
      "dmaap.messageLimit": -1,
      "application.ssl.trustStorePath": "/opt/app/bbs-event-processor/etc/cert/trust.jks",
      "application.clEventStatus": "ONSET",
      "aai.protocol": "https",
      "dmaap.protocol": "http",
      "application.closeLoop.configKey": "close_loop",
      "application.pipelinesTimeoutSec": 1,
      "application.clOriginator": "DCAE-BBS-ep",
      "application.reregistration.clControlName": "clControlNameBBS",
      "application.reregistration.configKey": "pnf_reregistration",
      "application.locationLevel": "INFO",
      "application.ssl.enableDmaapCertAuth": true,
      "application.clVersion": "1.0.0",
      "aai.aaiIgnoreSSLVerification": true,
      "application.cpe.authentication.clControlName": "clControlNameCpeAuth",
      "application.reregistration.policyScope": "policyScopeBBS",
      "dmaap.consumer.consumerGroup": "cl2",
      "application.ssl.trustStorePasswordPath": "/opt/app/bbs-event-processor/etc/cert/trust.pass"
    }
  }
}
```

UPDATE

CANCEL

☒ VALIDATE JSON

DELETE KEY

RESTCONF Collector

See [RESTConf Collector \(BBS Usecase\)](#)


```

[root@dev-dcae2-dcae-bootstrap-779767c49c-7cvdw /]# cfy blueprints validate blueprints/k8s-rcc-policy.yaml
Validating blueprint: blueprints/k8s-rcc-policy.yaml
Blueprint validated successfully
[root@dev-dcae2-dcae-bootstrap-779767c49c-7cvdw /]# cfy blueprints upload -b restconfcollector /blueprints/k8s-rcc-policy.yaml
Uploading blueprint /blueprints/k8s-rcc-policy.yaml...
k8s-rcc-policy.yaml |#####| 100.0%
Blueprint uploaded. The blueprint's id is restconfcollector
[root@dev-dcae2-dcae-bootstrap-779767c49c-7cvdw /]# cfy deployments create -b restconfcollector
Creating new deployment from blueprint restconfcollector...
Deployment created. The deployment's id is restconfcollector
[root@dev-dcae2-dcae-bootstrap-779767c49c-7cvdw /]# cfy executions start -d restconfcollector install
Executing workflow install on deployment restconfcollector [timeout=900 seconds]
2020-01-13 15:12:52.119 CFY <restconfcollector> Starting 'install' workflow execution
2020-01-13 15:12:52.701 CFY <restconfcollector> [rcc_k8s_8qm5me] Creating node instance
2020-01-13 15:12:52.701 CFY <restconfcollector> [rcc_k8s_8qm5me.create] Sending task 'k8splugin.create_for_platforms'
2020-01-13 15:12:55.168 LOG <restconfcollector> [rcc_k8s_8qm5me.create] INFO: Added config for dcae2-collectors-rcc
2020-01-13 15:12:55.747 LOG <restconfcollector> [rcc_k8s_8qm5me.create] INFO: Done setting up: dcae2-collectors-rcc
2020-01-13 15:12:55.747 CFY <restconfcollector> [rcc_k8s_8qm5me.create] Task succeeded 'k8splugin.create_for_platforms'
2020-01-13 15:12:55.747 CFY <restconfcollector> [rcc_k8s_8qm5me] Node instance created
2020-01-13 15:12:56.341 CFY <restconfcollector> [rcc_k8s_8qm5me] Configuring node instance: nothing to do
2020-01-13 15:12:56.341 CFY <restconfcollector> [rcc_k8s_8qm5me] Starting node instance
2020-01-13 15:12:56.341 CFY <restconfcollector> [rcc_k8s_8qm5me.start] Sending task 'k8splugin.create_and_start_container_for_platforms'
2020-01-13 15:12:57.559 LOG <restconfcollector> [rcc_k8s_8qm5me.start] INFO: Starting k8s deployment for dcae2-collectors-rcc, image: nexus3.onap.org:10001/onap/org.onap.dcae2.collectors.restconfcollector:1.1.1, env: {'CONSUL_HOST': u'consul-server.onap.svc.cluster.local', u'DMAAPHOST': u'message-router.onap.svc.cluster.local', 'CONFIG_BINDING_SERVICE': u'config_binding_service', u'CBS_HOST': u'config-binding-service.dcae.svc.cluster.local', u'DMAAPPORT': u'3904', u'CBS_PORT': u'10000', u'CONSUL_PORT': u'8500', u'DMAAPPUBTOPIC': u'unauthenticated.DCAE_RCC_OUTPUT'}, kwargs: {'readiness': {'u'endpoint': u'/healthcheck', u'type': u'http', u'timeout': u'1s', u'interval': u'15s'}, 'tls_info': {}, 'replicas': 1, u'envs': {u'CONSUL_HOST': u'consul-server.onap.svc.cluster.local', u'DMAAPHOST': u'message-router.onap.svc.cluster.local', u'CONFIG_BINDING_SERVICE': u'config_binding_service', u'CBS_HOST': u'config-binding-service.dcae.svc.cluster.local', u'DMAAPPORT': u'3904', u'CBS_PORT': u'10000', u'CONSUL_PORT': u'8500', u'DMAAPPUBTOPIC': u'unauthenticated.DCAE_RCC_OUTPUT'}, 'labels': {'cfydeployment': u'restconfcollector', 'cfynodeinstance': u'rcc_k8s_8qm5me', 'cfynode': u'rcc_k8s'}, 'ctx': <cloudify.context.CloudifyContext object at 0x7fb63e5872d0>, 'always_pull_image': False, 'resource_config': {}, 'log_info': {'u'log_directory': u'/opt/app/RCCollector/logs'}, u'ports': [u'8080:30416'], 'k8s_location': u'central'}
2020-01-13 15:12:58.275 LOG <restconfcollector> [rcc_k8s_8qm5me.start] INFO: Passing k8sconfig: {'tls': {'u'cert_path': u'/opt/tls/shared', u'image': u'nexus3.onap.org:10001/onap/org.onap.dcae2.deployments.tls-init-container:1.0.3', u'ca_cert_configmap': u'dev-dcae2-dcae-bootstrap-dcae-cacert', u'component_ca_cert_path': u'/opt/dcae/cacert/cacert.pem'}, 'filebeat': {u'config_map': u'dcae-filebeat-configmap', u'config_path': u'/usr/share/filebeat/filebeat.yml', u'log_path': u'/var/log/onap', u'image': u'docker.elastic.co/beats/filebeat:5.5.0', u'data_path': u'/usr/share/filebeat/data', u'config_subpath': u'filebeat.yml'}, 'consul_dns_name': u'consul-server.onap', 'image_pull_secrets': [u'onap-docker-registry-key'], 'namespace': u'onap', 'consul_host': 'consul-server:8500', 'default_k8s_location': u'central'}
2020-01-13 15:12:58.275 LOG <restconfcollector> [rcc_k8s_8qm5me.start] INFO: k8s deployment initiated successfully for dcae2-collectors-rcc: {'services': ['dcae2-collectors-rcc', 'xdcae2-collectors-rcc'], 'namespace': u'onap', 'location': u'central', 'deployment': 'dep-dcae2-collectors-rcc'}
2020-01-13 15:12:58.275 LOG <restconfcollector> [rcc_k8s_8qm5me.start] INFO: Waiting up to 1800 secs for dcae2-collectors-rcc to become ready
^A2020-01-13 15:13:29.970 LOG <restconfcollector> [rcc_k8s_8qm5me.start] INFO: k8s deployment is ready for: dcae2-collectors-rcc
2020-01-13 15:13:30.550 CFY <restconfcollector> [rcc_k8s_8qm5me.start] Task succeeded 'k8splugin.create_and_start_container_for_platforms'
2020-01-13 15:13:30.550 CFY <restconfcollector> [rcc_k8s_8qm5me] Node instance started
2020-01-13 15:13:31.265 CFY <restconfcollector> 'install' workflow execution succeeded
Finished executing workflow install on deployment restconfcollector
* Run 'cfy events list -e 2ea4f906-536b-48b1-aa34-dd6b4baed255' to retrieve the execution's events/logs

```

VES mapper

See [VESMapper \(BBS Usecase\)](#)

VES Collector

Configure mapping VES event domain to DMaaP topic: ves-statechange --> unauthenticated.CPE_AUTHENTICATION

Access Consul UI: http://<consul_server_ui>:30270/ui/#/dc1/services

Modify dcae-ves-collector configuration by adding a new VES domain to DMaaP topic mapping

```
"ves-statechange": { "type": "message_router", "dmaap_info": { "topic_url": "http://message-router:3904/events/unauthenticated.CPE_AUTHENTICATION" } }
```

SERVICES

NODES

KEY/VALUE

ACL

DC1

/ +

dcae-dash-board

dcae-hv-ves-collector

dcae-prh

dcae-snmpttrap-collector

dcae-tca-analytics

dcae-ves-collector

dcaeegen2-collectors-rc

deployment_handler

holmes-engine-mgmt

holmes-rule-mgmt

k8s-plugin

policy_handler

sca669ba58d274972ba3aa9dfaba9ae46-dcaeegen2-svc-mapper

dcae-ves-collector

```
/etc/CommonEventFormat_30.0.1.json\ , \ \ \ \ \ .
/etc/CommonEventFormat_30.0.1.json\", \"collector.keystore.passwordfile\":
\"/opt/app/VESCollector/etc/passwordfile\", \"collector.inputQueue.maxPending\":
\"8096\", \"streams_publishes\": {\"ves-measurement\": {\"type\": \"message_router\",
\"dmaap_info\": {\"topic_url\": \"http://message-router:3904/events
/unauthenticated.VES_MEASUREMENT_OUTPUT/\"}}, \"ves-fault\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.SEC_FAULT_OUTPUT/\"}}, \"ves-statechange\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.CPE_AUTHENTICATION\"}}, \"ves-pnfRegistration\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.VES_PNFREG_OUTPUT/\"}}, \"ves-other\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.SEC_OTHER_OUTPUT/\"}}, \"ves-heartbeat\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.SEC_HEARTBEAT_OUTPUT/\"}}, \"ves-notification\": {\"type\":
\"message_router\", \"dmaap_info\": {\"topic_url\": \"http://message-router:3904
/events/unauthenticated.VES_NOTIFICATION_OUTPUT/\"}}},
\"collector.service.secure.port\": \"8443\", \"header.authflag\": \"0\",
\"collector.keystore.file.location\": \"/opt/app/VESCollector/etc/keystore\",
```

UPDATE

CANCEL

☒ VALIDATE JSON

DELETE KEY

SDNC

Make sure that BBS DGs in SDNC DGBuilder are in Active state

```
bbs-access-connectivity-network-topology-operation-create-huawei
bbs-access-connectivity-network-topology-operation-delete-huawei
bbs-internet-profile-network-topology-operation-change-huawei
bbs-internet-profile-network-topology-operation-common-huawei
bbs-internet-profile-network-topology-operation-create-huawei
bbs-internet-profile-network-topology-operation-delete-huawei
validate-bbs-network-input-parameters
```

http://dguser:test123@{{sdnc-dgbuilder_Node-IP}}:30203/#

Service Logic Administration - mariadb-galera.onap									
API	aai-get-aic-zone	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	aai-get-network-instance-group	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-activate	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-create	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-deactivate	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-delete	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	assign-vlan-tags	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	auto-ip-assignment	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-access-connectivity-network-topology-operation-create-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-access-connectivity-network-topology-operation-delete-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-change-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-common-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-create-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-delete-huawei	1.5.1	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	brg-topology-operation	1.5.1	sync	Y	DeActivate	Display	XML	Delete	

Access SDN M&C DG

Configure Access SDN M&C IP address in SDNC DG using dgbuilder

Export the relevant DG, modify the IP address, import back the DG and activate it

`http://dguser:test123@{{sdnc-dgbuilder_Node-IP}}:30203/#`

- > GENERIC-RESOURCE-API: bbs-access-connectivity-network-topology-operation-create-huawei.json
- > GENERIC-RESOURCE-API: bbs-access-connectivity-network-topology-operation-delete-huawei.json

Edge SDN M&C DG

Configure Edge SDN M&C IP address in SDNC DG using dgbuilder

Export the relevant DG, modify the IP address, import back the DG and activate it

`http://dguser:test123@{{sdnc-dgbuilder_Node-IP}}:30203/#`

- > GENERIC-RESOURCE-API: bbs-access-connectivity-network-topology-operation-common-huawei.json

Service Logic Administration - sdnc-dbhost.onap									
GENERIC-RESOURCE-API	aai-get-aic-zone	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	aai-get-network-instance-group	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-activate	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-create	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-deactivate	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	api-contrail-route-topology-operation-delete	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	assign-vlan-tags	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	auto-ip-assignment	1.4.4	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-access-connectivity-network-topology-operation-create-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-access-connectivity-network-topology-operation-delete-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-change-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-common-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-create-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	
GENERIC-RESOURCE-API	bbs-internet-profile-network-topology-operation-delete-huawei	\$(project.version)	sync	Y	DeActivate	Display	XML	Delete	

Ref: [Swisscom Edge SDN M&C and virtual BNG](#)

Policy

BBS APEX Policy

Inside APEX container,

1) Edit DCAEConsumer URL in `examples/config/ONAPBBS/NomadicONTPolicyModel_config.json`

2) Edit AAI and SDNC URLs in `examples/config/ONAPBBS/config.txt`

```
AAI_URL=aai:8443
AAI_USERNAME=AAI
AAI_PASSWORD=AAI
SDNC_URL=sdnc:8282
SDNC_USERNAME=admin
SDNC_PASSWORD=Kp8bJ4SXszM0WXlhak3eHlcse2gAw84vaoGGmJvUy2U
SVC_NOTIFICATION_URL=http://cl.vml.mso.simpLEDemo.openecomp.org:8080
```

3) Launch APEX BBS policy as a background process

```
nohup /opt/app/policy/apex-pdp/bin/apexApps.sh engine -c examples/config/ONAPBBS/NomadicONTPolicyModel_config.json &
```

Notes from [Ram Krishna Verma](#):

1. **Package the policy in docker image** and then it gets automatically deployed when you call "docker run". Basically it takes both configuration & model file as arguments while starting the apex engine. This is same as you mentioned below.

1. **Using apex deployment client:** Apex-pdp comes with a deployment client UI with which you can connect to a live running apex engine and perform a hot deployment of policy (without any engine restart). This is really helpful for pushing updates to an already running policy or if you just want to start apex engine with configuration file and push the policy later.

Have a look at - <https://docs.onap.org/en/casablanca/submodules/policy/apex-pdp.git/docs/APEX-User-Manual.html#the-apex-deployment-client>

Note: The clients are not started by default with apex engine. Instead user needs to start the client either locally or inside the container. However, we are planning to package the clients in a separate docker container so that in OOM installations of ONAP we will have it started & ready for use.

1. **Using Policy Distribution:** The apex policy (model file) can also be added to the service in SDC and then when user distributes the service, it will be received by the policy-distribution component inside the distributed CSAR. Which is then parsed and the policy (model file) is deployed in the running apex engine. This way you can deploy policy to running apex engine via Service creation in SDC.

Have a look at - <https://docs.onap.org/en/casablanca/submodules/policy/distribution.git/docs/index.html?highlight=distribution>

<https://wiki.onap.org/display/DW/Policy+Platform++SDC+Service+Distribution+Software+Architecture>

1. **Using new Policy Framework architecture:** In Dublin release, we have created a new architecture of entire Policy Framework in ONAP. The architecture is based on various microservices having independent responsibilities (API, PAP, PDP etc.). Using this one can create/update policies and deploy them to pdp engines via REST calls. CLAMP will use the REST API's to deploy policies in pdp engines.

Note: As this is new feature coming in Dublin release, pairwise testing is going on right now and post that official documentation will be created for the same.

In the meantime have a look at - <https://wiki.onap.org/display/DW/Policy+Design+and+API+Flow+for+Model+Driven+Control+Loop>

<https://wiki.onap.org/display/DW/The+ONAP+Policy+Framework>

Edge Services: vBNG+AAA+DHCP, Edge SDN M&C

[Swisscom Edge SDN M&C and virtual BNG](#)

BBS Service Configuration

AAI: Business customer

Create a business customer and subscription to BBS service type in AAI

Business Customer AAI

```
curl -X PUT \
  https://aai.api.simpLEDemo.openecomp.org:30233/aai/v16/business/customers/customer/0dd5ab04-11a1-48b2-9792-6f12a42223d3 \
  -H 'Accept: application/json' \
  -H 'Authorization: Basic QUfJOkFBSQ==' \
  -H 'Cache-Control: no-cache' \
  -H 'Connection: keep-alive' \
  -H 'Content-Type: application/json' \
  -H 'Host: aai.api.simpLEDemo.openecomp.org:30233' \
  -H 'User-Agent: PostmanRuntime/7.15.0' \
  -H 'X-FromAppId: Postman Application' \
  -H 'X-TransactionId: Postman REST Transaction' \
  -H 'accept-encoding: gzip, deflate' \
  -H 'cache-control: no-cache' \
  -H 'content-length: 140' \
  -d '{
    "global-customer-id": "0dd5ab04-11a1-48b2-9792-6f12a42223d3",
    "subscriber-name": "BBSCustomer",
    "subscriber-type": "CUST"
  }
'
```

```
curl -X GET \
  https://aai.api.simpLEDemo.openecomp.org:30233/aai/v16/business/customers/customer/0dd5ab04-11a1-48b2-9792-6f12a42223d3 \
  -H 'Accept: application/json' \
  -H 'Authorization: Basic QUfJOkFBSQ==' \
  -H 'Cache-Control: no-cache' \
  -H 'Connection: keep-alive' \
  -H 'Content-Type: application/json' \
  -H 'Host: aai.api.simpLEDemo.openecomp.org:30233' \
  -H 'User-Agent: PostmanRuntime/7.15.0' \
  -H 'X-FromAppId: Postman Application' \
  -H 'X-TransactionId: Postman REST Transaction' \
  -H 'accept-encoding: gzip, deflate' \
  -H 'cache-control: no-cache' \
  {
    "global-customer-id": "0dd5ab04-11a1-48b2-9792-6f12a42223d3",
    "subscriber-name": "BBSCustomer",
    "subscriber-type": "CUST",
    "resource-version": "1561552477331"
  }
```

Create BBS service subscription in AAI

```
curl -X PUT \
  https://aai.api.simplesdemo.openecomp.org:30233/aai/v14/business/customers/customer/0dd5ab04-11a1-48b2-9792-6f12a42223d3/service-subscriptions/service-subscription/BBS_E2E_Service \
  -H 'Accept: application/json' \
  -H 'Authorization: Basic QUFJOkFBSQ==' \
  -H 'Cache-Control: no-cache' \
  -H 'Connection: keep-alive' \
  -H 'Content-Type: application/json' \
  -H 'Host: aai.api.simplesdemo.openecomp.org:30233' \
  -H 'User-Agent: PostmanRuntime/7.15.0' \
  -H 'X-FromAppId: Postman Application' \
  -H 'X-TransactionId: Postman REST Transaction' \
  -H 'accept-encoding: gzip, deflate' \
  -H 'cache-control: no-cache' \
  -H 'content-length: 38' \
  -d '{
    "service-type": "BBS_E2E_Service"
  },'

curl -X GET \
  'https://aai.api.simplesdemo.openecomp.org:30233/aai/v16/business/customers/customer/0dd5ab04-11a1-48b2-9792-6f12a42223d3?depth=all' \
  -H 'Accept: application/json' \
  -H 'Authorization: Basic QUFJOkFBSQ==' \
  -H 'Cache-Control: no-cache' \
  -H 'Connection: keep-alive' \
  -H 'Content-Type: application/json' \
  -H 'Host: aai.api.simplesdemo.openecomp.org:30233' \
  -H 'User-Agent: PostmanRuntime/7.15.0' \
  -H 'X-FromAppId: Postman Application' \
  -H 'X-TransactionId: Postman REST Transaction' \
  -H 'accept-encoding: gzip, deflate' \
  -H 'cache-control: no-cache'

{
  "global-customer-id": "0dd5ab04-11a1-48b2-9792-6f12a42223d3",
  "subscriber-name": "BBSCustomer",
  "subscriber-type": "CUST",
  "resource-version": "1561552477331",
  "service-subscriptions": {
    "service-subscription": [
      {
        "service-type": "BBS_E2E_Service",
        "resource-version": "1561553245301"
      }
    ]
  }
}
```

BBS HSIA CFS Onboarding and Distribution

Postman Collection: [BBS_Use_Case_PostmanCollection.zip](#)

1) Create Vendor License Model (VLM)

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2) Resource Onboarding

Notes:

- Create VFCs (CPE, AccessConnectivity, InternetProfile) and VFs with single VFC (CPE, AccessConnectivity, InternetProfile).
- Declare attributes as inputs in VF.

Resource	Description	Template
----------	-------------	----------

CPE	CPE (ONT+RG) PNF	CpePnf.yml
AccessConnectivity	Access Connectivity RFS	access_connectivity.yml
InternetProfile	Internet Profile RFS	InternetProfile.yml

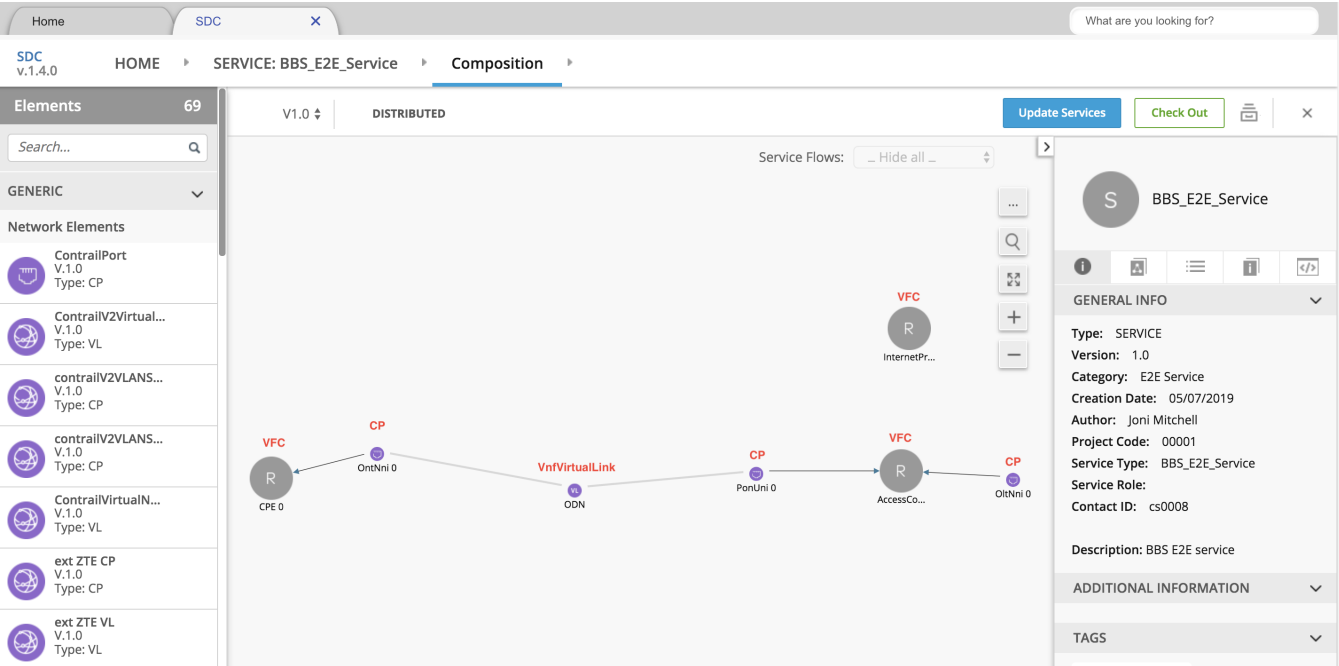
Error rendering macro 'multimedia'

com.atlassian.rendererv2.macro.MacroException: Cannot find attachment 'BBS_02_ResourceOnboarding.mp4'

3) E2E Service Design

Notes:

- Create E2E service, ontNni has CPE as a requirement
- ODN as VnfVirtualLink
- ponUni and oltNni have AccessConnectivity VF as a requirement



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com.atlassian.rendererv2.macro.MacroException: Cannot find attachment 'BBS_03_E2EServiceDesign.mp4'

BSS HSIA Service Order: Request Input

Input provided as part of the service order, sent to External API from BSS

NOTE: ont_ont_manufacturer = [HUAWEI or NOKIA], ont_ont_pnf_name is used as pnf_correlation_id by SO

Service Order coming from BSS to ExternalAPI

```
{
  "externalId": "BBS_BSS_TrackindId3584",
  "category": "NetworkService",
  "description": "Service Order for a new HSIA CFS",
}
```

```
"priority": "1",
"relatedParty": [
  {
    "id": "6f486438-87b5-4bee-8f85-30090c760501",
    "role": "ONAPcustomer",
    "name": "EnterpriseA",
    "@referredType": "Consumer"
  }
],
"orderItem": [
  {
    "id": "1",
    "action": "add",
    "service": {
      "name": "BBS_E2E_Service_1",
      "serviceState": "active",
      "serviceSpecification": {
        "id": "0187be8c-8efb-4531-97fa-dbe984ed9cdb"
      },
      "serviceCharacteristic": [
        {
          "name": "ont_ont_serial_num",
          "value": {
            "serviceCharacteristicValue": "HWTCC01B7503"
          }
        },
        {
          "name": "edgeinternetprofile_ip_rg_mac_addr",
          "value": {
            "serviceCharacteristicValue": "54:04:a6:38:12:9d"
          }
        },
        {
          "name": "edgeinternetprofile_ip_downstream_speed",
          "value": {
            "serviceCharacteristicValue": "10"
          }
        },
        {
          "name": "ont_ont_mac_addr",
          "value": {
            "serviceCharacteristicValue": "54:04:a6:38:12:9d"
          }
        },
        {
          "name": "edgeinternetprofile_ip_remote_id",
          "value": {
            "serviceCharacteristicValue": "AC9.000.010.001"
          }
        },
        {
          "name": "ont_ont_swVersion",
          "value": {
            "serviceCharacteristicValue": "1.0.0"
          }
        },
        {
          "name": "ont_ont_manufacturer",
          "value": {
            "serviceCharacteristicValue": "HUAWEI"
          }
        },
        {
          "name": "edgeinternetprofile_ip_service_type",
          "value": {
            "serviceCharacteristicValue": "BBS_E2E_Service"
          }
        },
        {
          "name": "ont_ont_pnf_name",
          "value": {
```

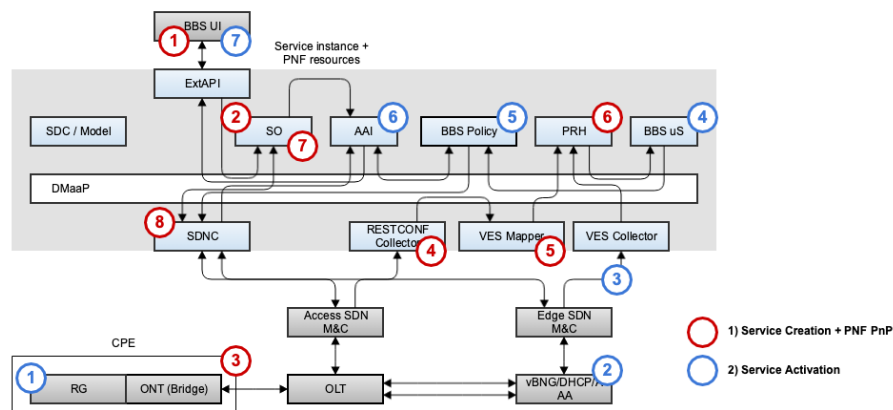


```

        "serviceCharacteristicValue": "Huawei-4857544302FF269D"
    },
    {
        "name": "edgeinternetprofile_ip_upstream_speed",
        "value": {
            "serviceCharacteristicValue": "10"
        }
    },
    {
        "name": "ont_ont_nf_type",
        "value": {
            "serviceCharacteristicValue": "HN8255WS"
        }
    },
    {
        "name": "cvlan",
        "value": {
            "serviceCharacteristicValue": "100"
        }
    },
    {
        "name": "svlan",
        "value": {
            "serviceCharacteristicValue": "1000"
        }
    }
    ]
}
]
}
}

```

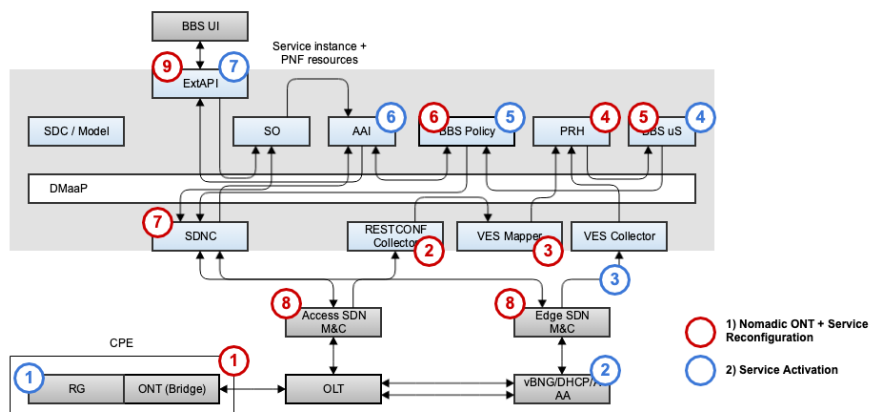
BBS HSIA Service Creation and Activation



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com.atlassian.renderer.v2.macro.MacroException: Cannot find attachment 'BBS_04_HSIACreationAndActivation.mp4'

BBS HSIA Service Reconfiguration. Nomadic ONT



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