DCAE - Service Components Onboarding and Lifecycle Management

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AGENDA

Platform Architecture

Service Component Pre-requisite

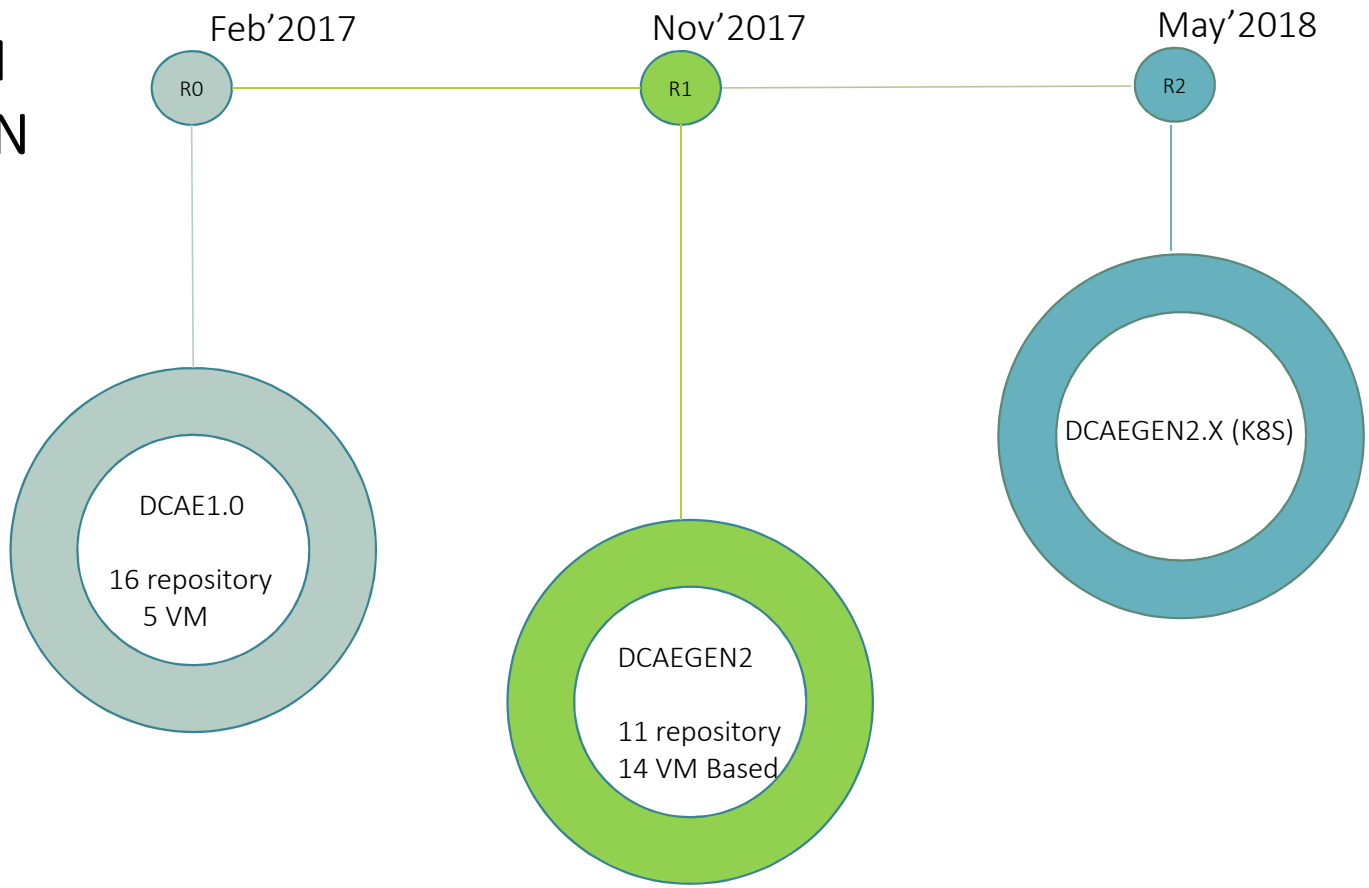
Onboarding Flow

Catalog & Service Template

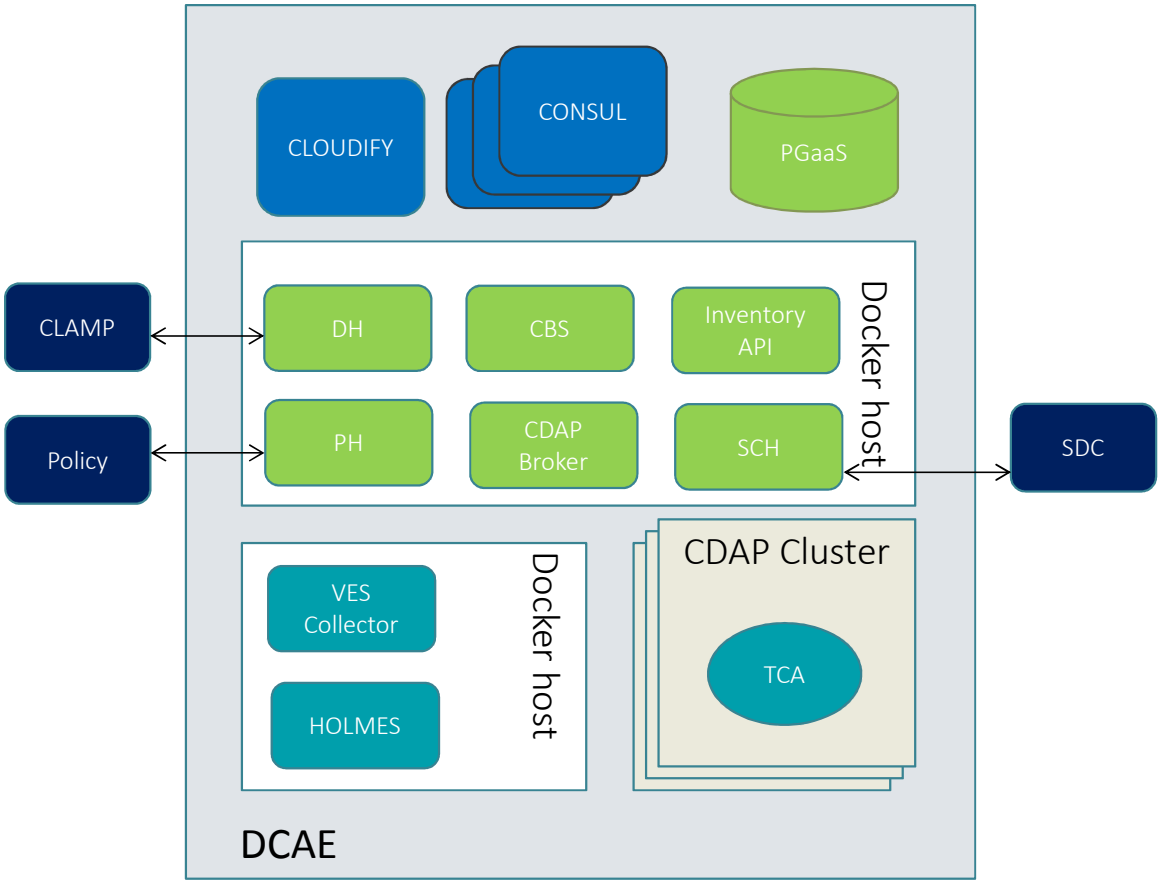
Control Loop Configuration Flow

R3 Focus

DCAE PLATFORM EVOLUTION



ONAP DCAE Architecture (R1)

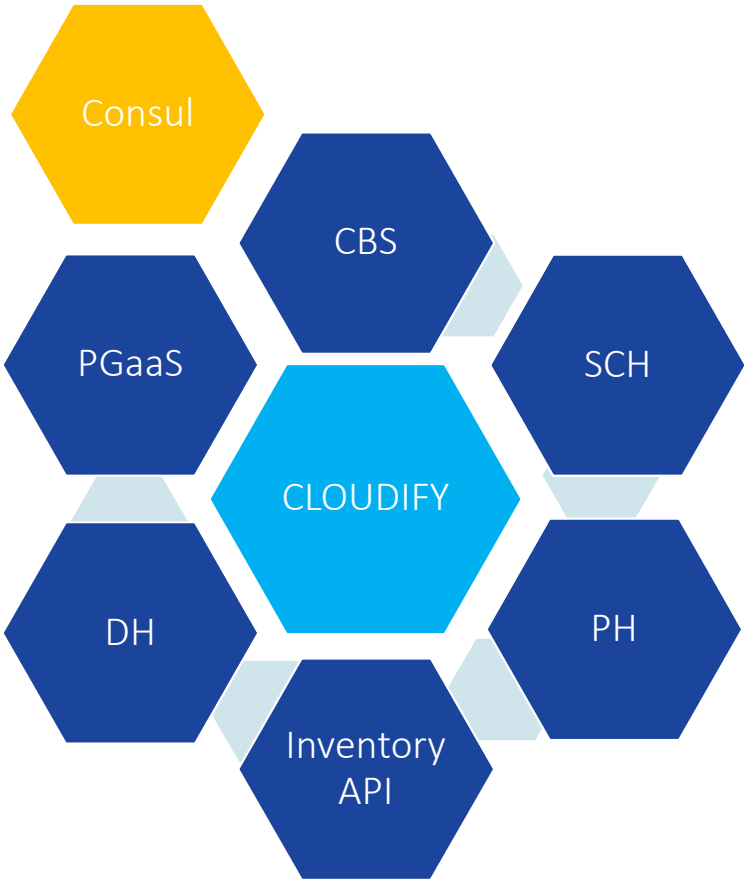


DCAE Platform components

- Cloudify (& Plugins)
- Consul
- Config Binding Service (CBS)
- Service change Handler (SCH)
- Policy Handler (PH)
- Deployment Handler (DH)
- Inventory API
- CDAP Broker
- PGaaS
- CDAP Cluster
- Docker Hosts

R2 Platform Updates

- Utilizing OOM Kubernetes cluster
- No Hadoop cluster deployment
- Containerized Cloudify
- Using Helm chart for Bootstrap, Cloudify Manager, Redis
- All platform (and services) deployment through Cloudify (custom K8 plugin)
- PGaaS deployment through OOM and Cloudify
- OOM Deployed Consul will be utilized
- MSB (Api and websocket)
- Policy Flow enablement



Modular

Well-defined interfaces

Light weight

Scale quickly

Technology freedom

Deployment Flexibility

Service Components

Service Component Requirements

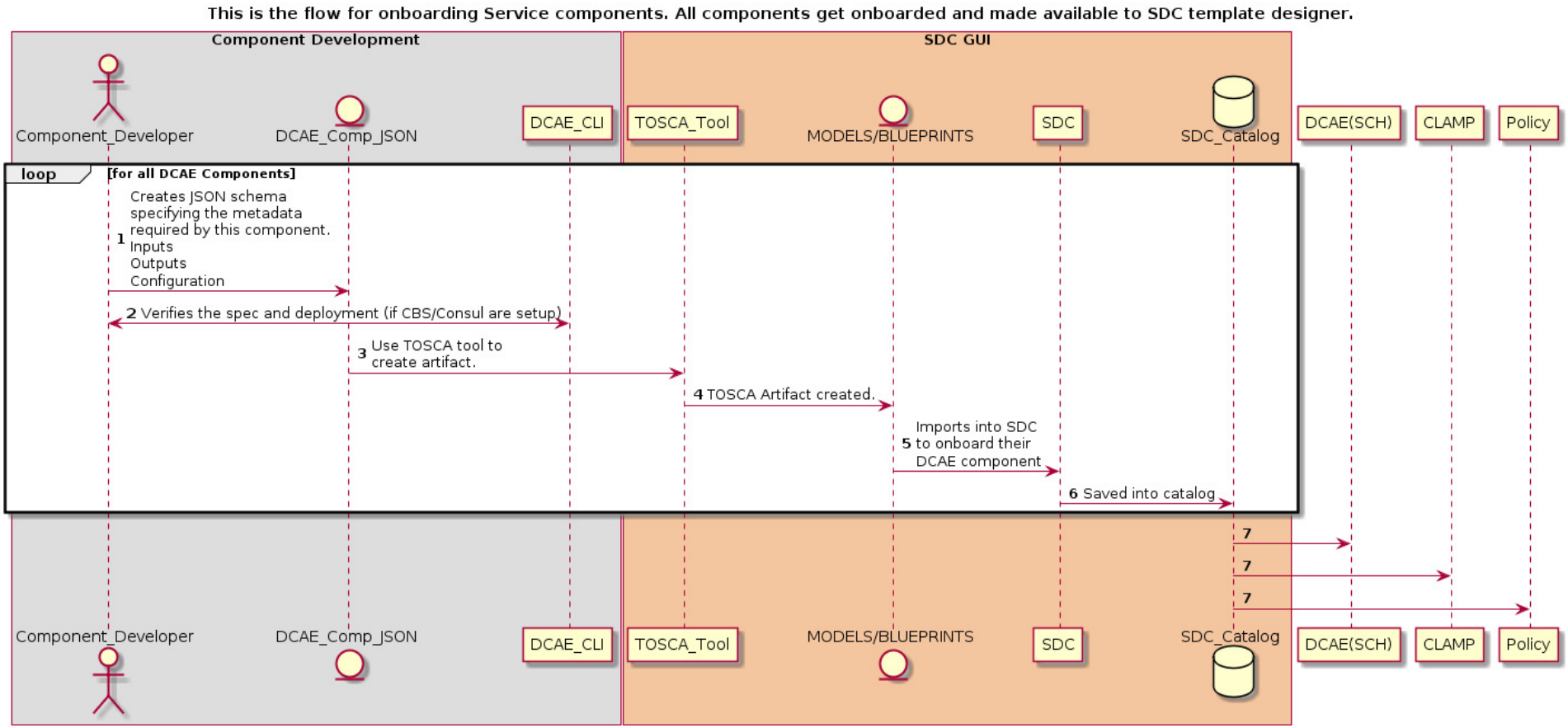
- Overall functionality
- Spec creation and validation through dcae_cli utility
- State synchronization
- Utilize ConfigBindingService API's
- Enforcement of Policy Decisions

Design time requirement

Component specification

- Defining input and output structure
- Topic Keys
- Configuration
  - ✓ Design-time
  - ✓ Deployment-time
  - ✓ Policy editable
- Policy Model
- Filesystem mapping
- Port mapping
- Image specification

Onboarding Flow (Target)



Component spec (Example)

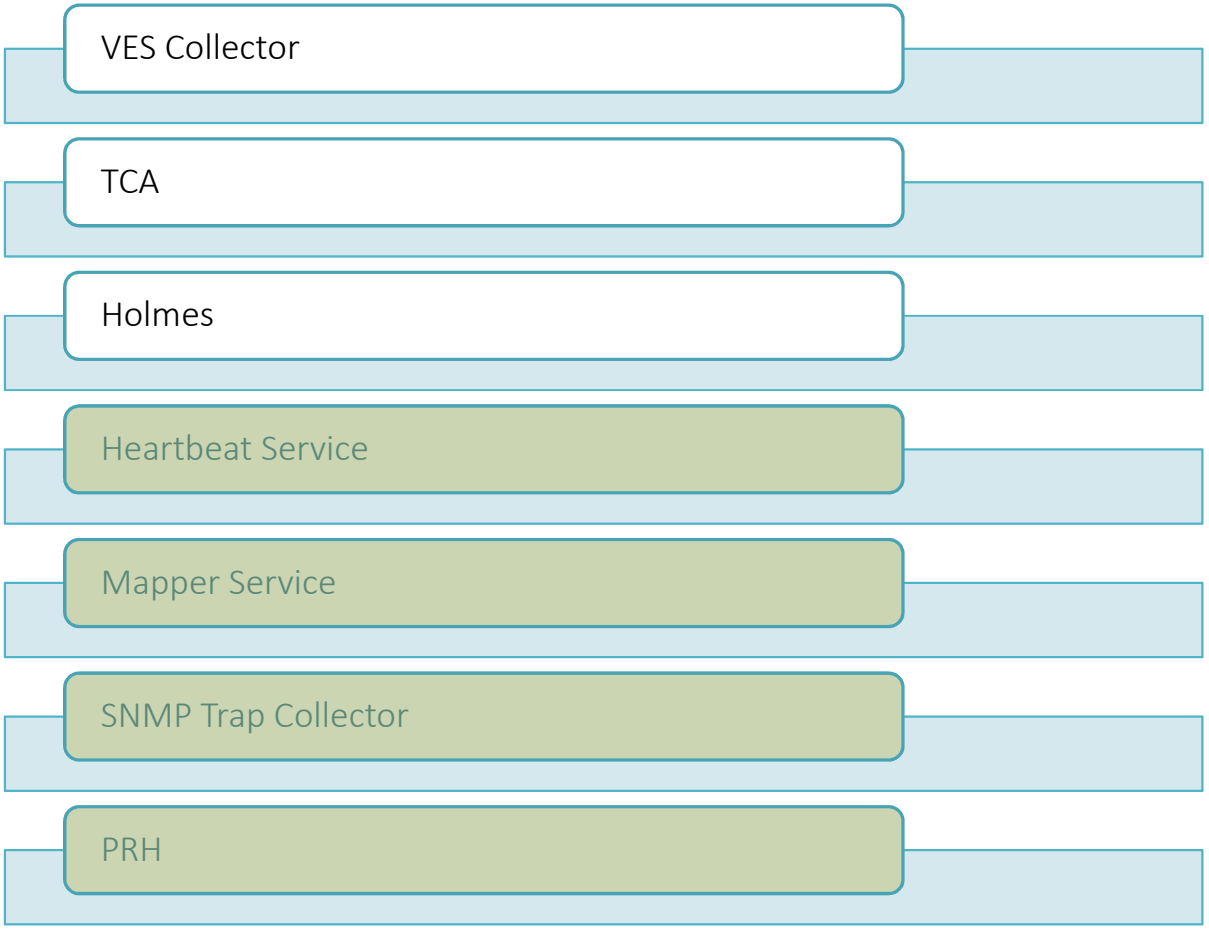
```
{
        "self": {
                "version": "1.2.1",
                "name": "dcae-ves-collector",
                "description": "Collector for receiving VES events through restful interface",
                "component_type": "docker"
        },
        "streams": {
                "subscribes": [],
                "publishes": [
                        {
                                "format": "VES_specification",
                                "version": "5.28.4",
                                "type": "message router",
                                "config_key": "ves-fault"
                        },
```

```
          },
          "parameters": [
                  {
                          "name": "collector.service.port",
                          "value": -1,
                          "description": "standard http port"
                  },
                  {
                          "name": "collector.service.secure.port",
                          "value": 8443,
                          "description": "secure port ",
                          "designer_editable": true
                  },
```

```
                  }
          ],
          "auxilary": {
                  "healthcheck": {
                          "type": "https",
                          "interval": "15s",
                          "timeout": "1s",
                          "endpoint": "/healthcheck"
                  },
                  "volumes": [
                          {
                                  "container": {
                                          "bind": "/opt/app/dcae-certificate"
                                  },
                                  "host": {
                                          "path": "/opt/app/dcae-certificate"
                                  }
                          },
                          {
                                  "container": {
                                          "bind": "/opt/app/VESCollector/logs"
                                  },
                                  "host": {
                                          "path": "/opt/logs/DCAE/VESCollector/logs"
                                  }
                          }
                  ],
                  "ports": [
                          "8443:8443"
                  ]
          },
          "artifacts": [
          {
                "type": "docker image",
                "uri": "nexus.onap.org:10001/onap/org.onap.dcaegen2.collectors.ves.vescollect
          }
          ]
}
```

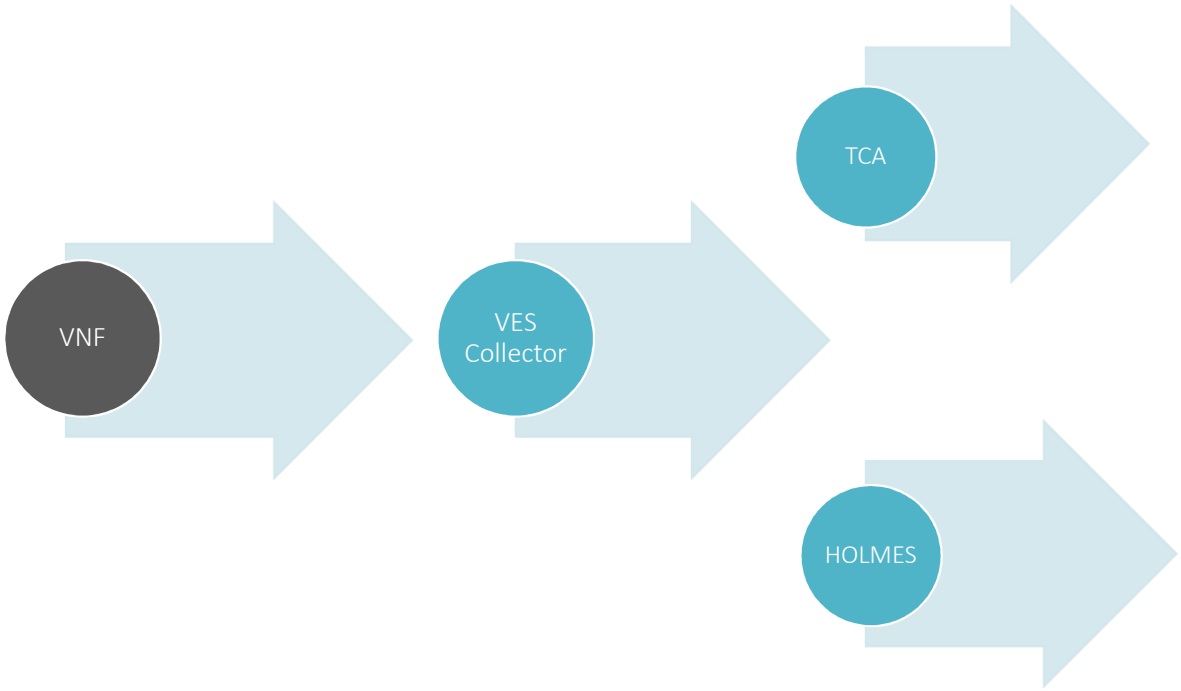
Blueprint (Example)

```
tosca_definitions_version: cloudify_dsl_1_3

description: >
  This blueprint will install the yes collector and provision the needed message router topics.

imports:
  - http://www.getcloudify.org/spec/cloudify/3.4/types.yaml
  - https://NEXUS_REPO_HOST:8443/repository/NEXUS_RAW/type_files/docker/2.2.0/node-type.yaml
  - https://NEXUS_REPO_HOST:8443/repository/NEXUS_RAW/type_files/relationship/1.0.0/node-type.ya
  - http://NEXUS_REPO_HOST:8081/repository/NEXUS_RAW/type_files/dmaap/dmaap_mr.yaml

inputs:

  service_id:
    description: Unique id used for an instance of this DCAE service. Use deployment id
    default: 'foobar'
  location_id:
    default: 'foocentral'
  docker_host_override:
    default: 'component_dockerhost'

  topic00_aaf_username:
  topic00_aaf_password:
  topic00_location:
    default: mtc5
  topic00_client_role:
    default: com.att.dcae.member

node_templates:
  topic00:
    type: dcae.nodes.Topic
    properties:
      topic_name: sec-fault-unsecure
  topic01:
    type: dcae.nodes.Topic
    properties:
      topic_name: sec-measurement-unsecure
  topic02:
    type: dcae.nodes.Topic
    properties:
      topic_name: sec-heartbeat-unsecure
  topic03:
    type: dcae.nodes.Topic
    properties:
      topic_name: sec-other-unsecure
  component00:
    type: dcae.nodes.DockerContainerForComponentsUsingDmaap
    properties:
      service_component_type:
        'dcae-controller-yes-collector'
      service_id:
        { get_input: service_id }
      location_id:
        { get_input: location_id }
      application_config:
        collector.keystore.passwordfile: "/opt/app/dcae-certificate/.password"
        collector.service.secure.port: -1
        tomcat.maxthreads: '200'
        collector.keystore.file.location: "/opt/app/dcae-certificate/keystore.jks"
        header.authflag: 0
        collector.service.port: 8080
        streams_publishes:
          sec_fault_unsecure:
            aaf_password: { get_input: topic00_aaf_password }
            dmaap_info: "<<topic00>>"
        services_calls: {}
        collector.schema.checkflag: 1
        collector.dmaap.streamid: fault=sec_fault,roadm-sec-to-hp|syslog=sec_syslog|heartbeat=sec_heartbeat|m
        header.authlist: userid1,base64encodepwd1|userid2,base64encodepwd2
        streams_subscribes: {}
        collector.inputQueue.maxPending: 8096
        collector.schema.file: "./etc/CommonEventFormat_27.2.json"
        collector.keystore.alias: dynamically generated
      image:
        NEXUS_REPO_HOST:18443/dcae-dev-raw/dcae-controller-yes-collector:1.1
      docker_config:
        healthcheck:
          type: "http"
          interval: "15s"
          timeout: "1s"
          endpoint: "/"
        ports:
        - 8443:8443
        volumes:
        - container:
            bind: /opt/app/dcae-certificate
          host:
            path: /opt/app/dcae-certificate
        - container:
            bind: /opt/app/VESCollector/logs
          host:
            path: /opt/logs/DCAE/VESCollector/logs
      streams_publishes:
        - name: topic00
          location: { get_input: topic00_location }
          client_role: { get_input: topic00_client_role }
          type: message_router

docker_host:
  type: dcae.nodes.SelectedDockerHost
  properties:
      location_id:
```



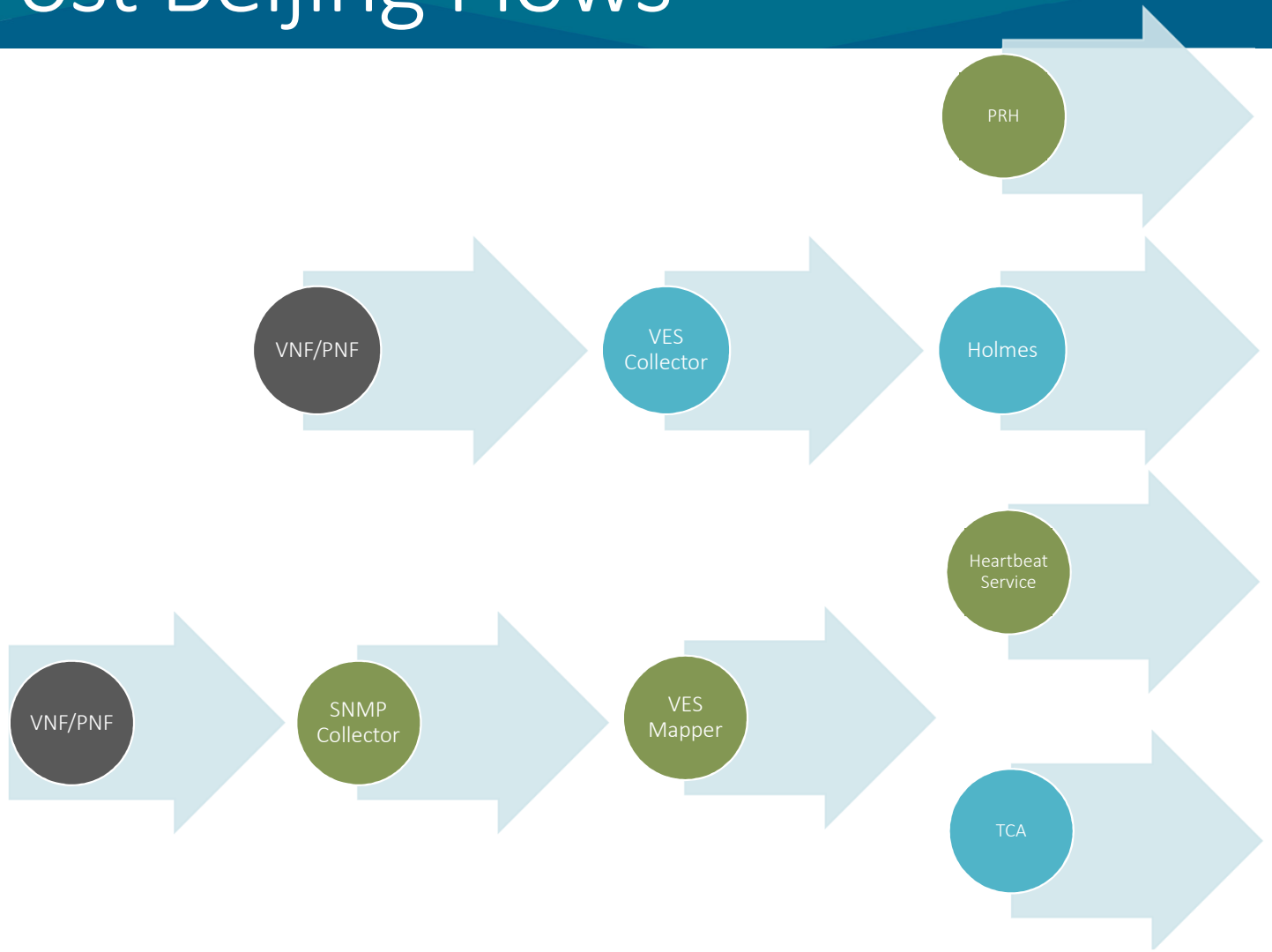
Service Component Catalog

Amsterdam Flows

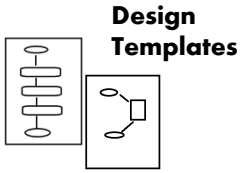


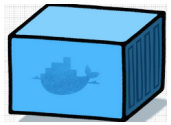
- Virtual Firewall
- Virtual DNS
- vCPE
- VoLTE

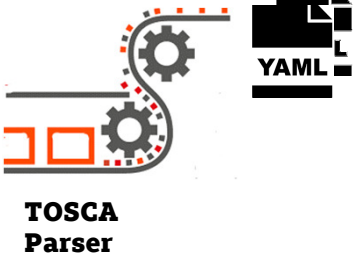
Post Beijing Flows

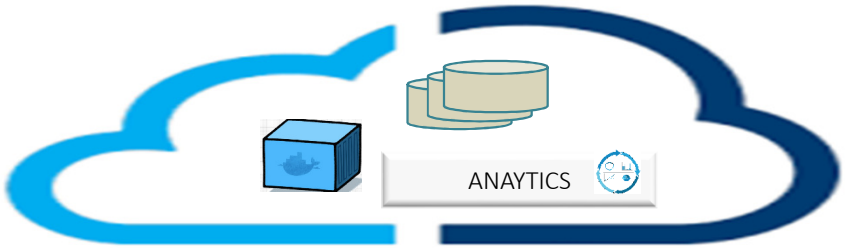


Onboarding, Service Design & Deployment Flow (Target view)

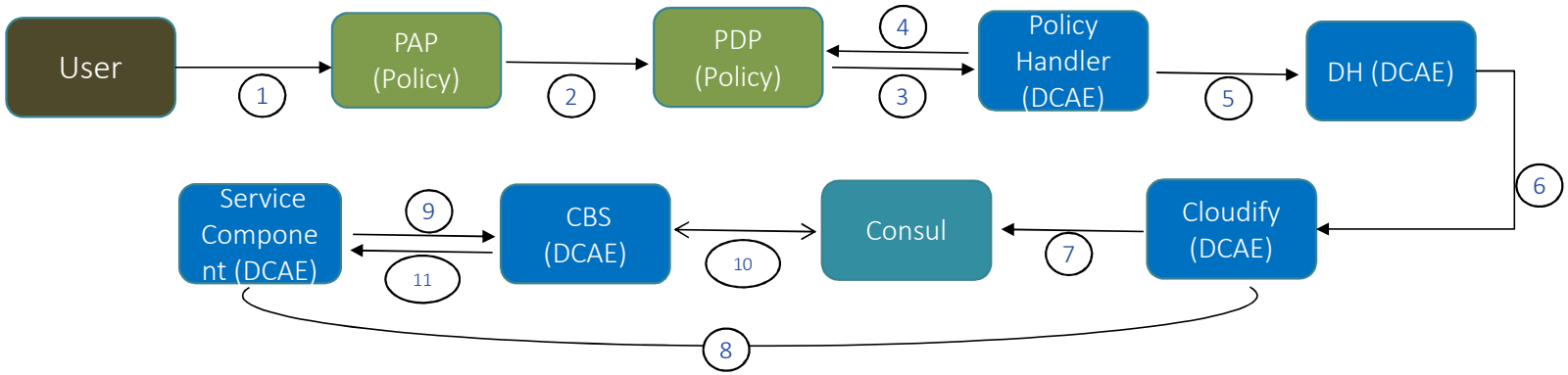








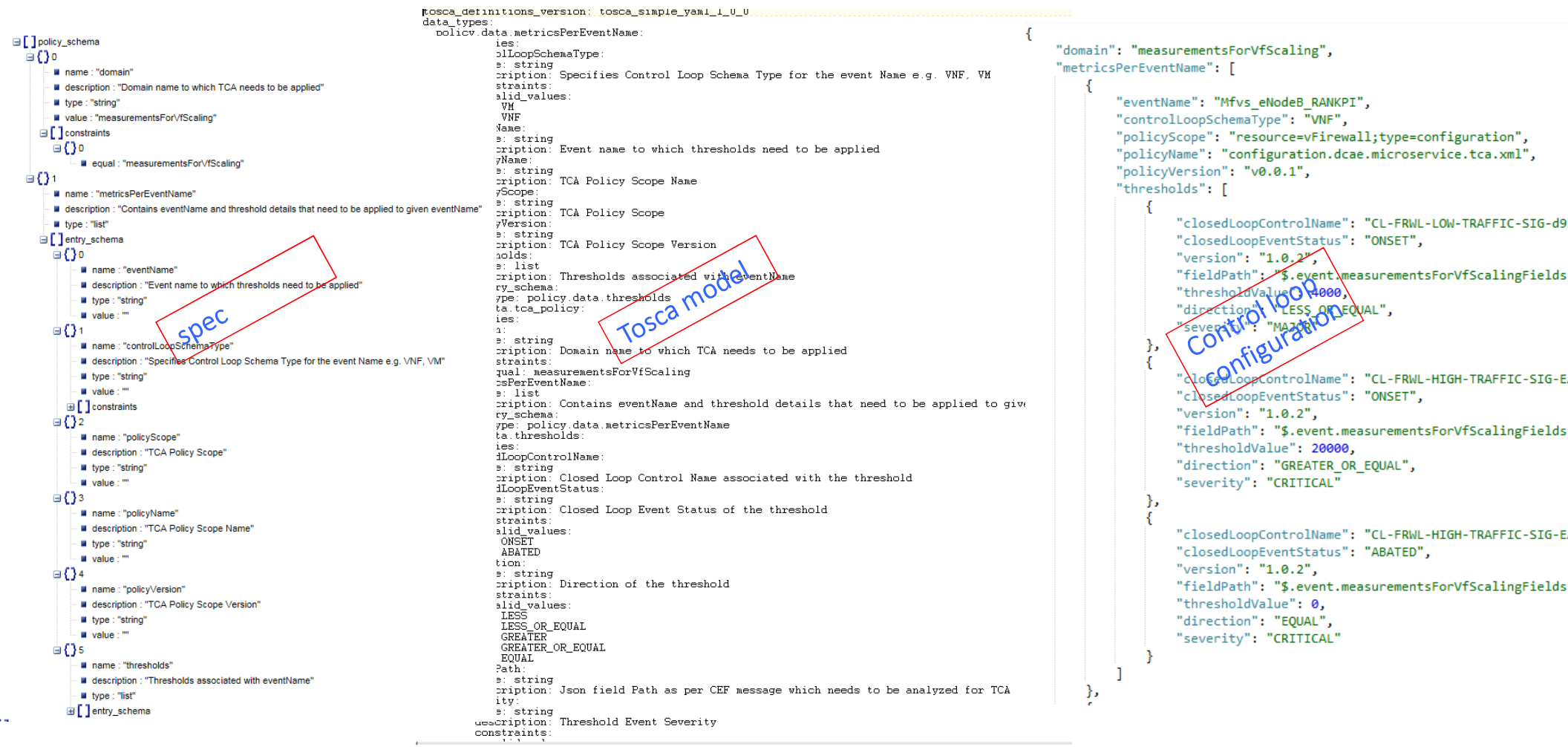
Configuration Flow



1 → Policy Create/update/delete
2 → Policy distribution
3 → Notification on policy change
4 → Get updated policy list
5 → If DCAE scope is updated; get latest policy config and notify deployment handler with deltas
6 → Identify components matching policy received.

7 → Update list of policy into consul KV under SCN folder
8 → Notification service component on policy update
9 → Invoke CBS API (<CBS>/service_component_all/) to fetch latest policy
10 → Fetches config under SCN folder and returns json object
11 → Receives updated policy and enforce new rules.

Policy Model/Configuration (sample)



DCAE platform functions after onboarding

- Deployment of service components based operation requirement and business need.
- Retrieval of blueprint via SDC distribution and store in DCAE inventory
- Retrieval of configuration policy and policy updates from Policy and making available in Consul
- Service component deployment (and undeploy) support through CLAMP
- Registration (deregistration) of components in Consul and/or Kubernetes platform for healthcheck and application state
- Service registration (deregistration) with MSB when applicable
- DMaaP resource provisioning when applicable
- Provides configuration api and policy configuration via CBS
- Components scaling

R3 Focus Areas

- SDC Design Studio integration for onboarding and generation of K8S blueprint
- Expanding Service Component portfolio
- Service component Policy modelling
- Enhanced S3P level support
- AAF Integration
- Integration with newer Analytics Platform (PNDA/Flink)

Questions?