ONAP DCAE Transformation proposal

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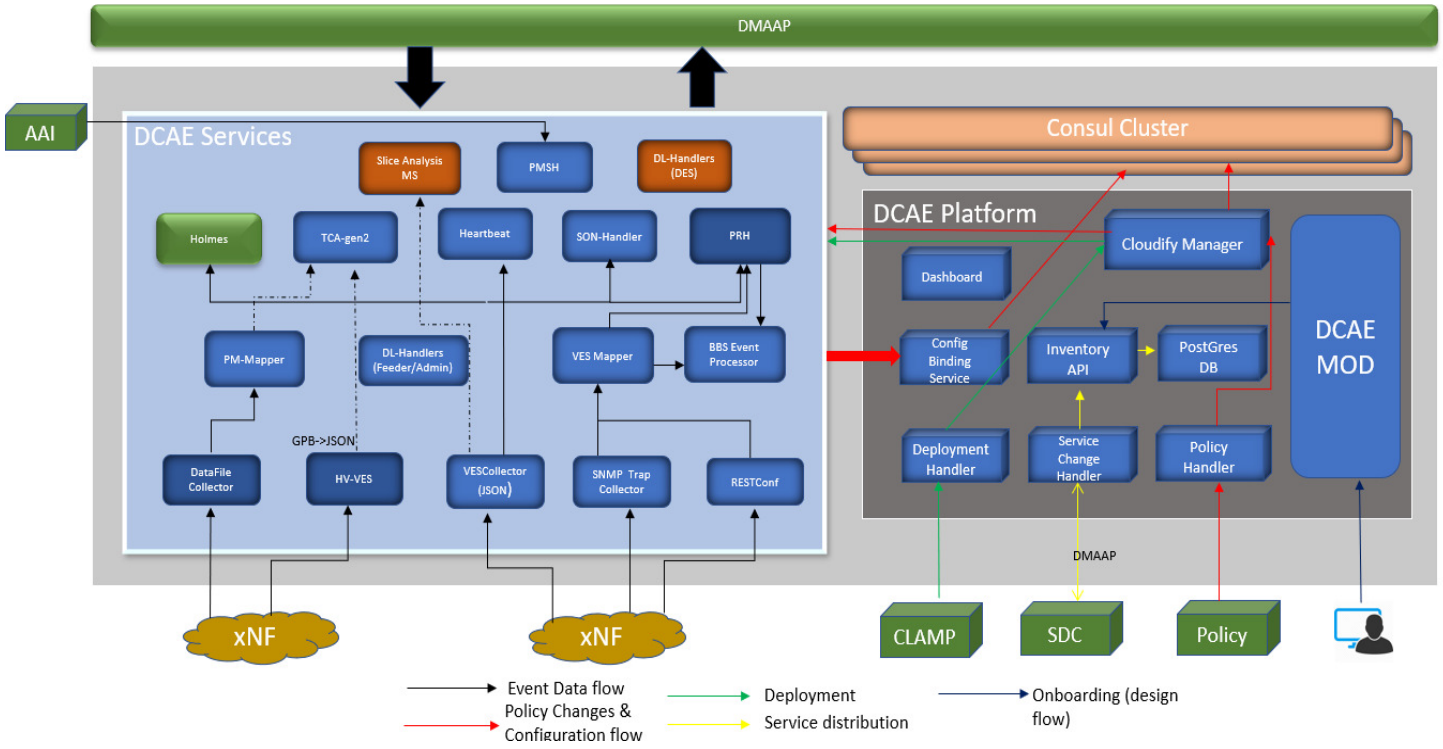
Present Mode of Operation

- DCAE platform provides standardized functions for DCAE MS's
  - Configuration management and retrieval through CBS
  - DMaap Topic provisioning
  - Consolidated view of DCAE deployments (across clusters)
  - Platform API for LCM of DCAE MS
  - Policy Interaction abstracted and managed by Policy Handler
  - Postgres DB initialization

- DCAE MOD generates Cloudify artifacts used for dynamic deployment

ONAP DCAE Architecture (Guilin)



Cloudify Manager
Primary orchestrator within in DCAE through which all DCAE MS are deployed. Cloudify, through its arsenal of plugins, is capable of relationship-based orchestration in many levels and cross different technologies.

Deployment Handler
Provides API for deploying DCAE MS into DCAE. Used by CLAMP and Dashboard

InventoryAPI
Provides API for storing and retrieving Service blueprints into Postgres

Service Change Handler
Retrieves DCAE specific blueprint composition distributed by SDC/DCAE-DS

Policy Handler
Retrieves configuration for DCAE components from Policy Engine. Listens on updates from Policy, identifies target mS and pushes update into mS (or Consul)

Dashboard
An UI for operation team to manage, deploy and track services component in DCAE

Config Binding Service (CBS)
Standard API layer for DCAE components to retrieve configuration (from Consul or other sources)

Consul
Provides KV store for DCAE MS configuration. Service registration is used for selected components

DCAE MOD (NiFI)
Design platform for onboarding and service composition creation

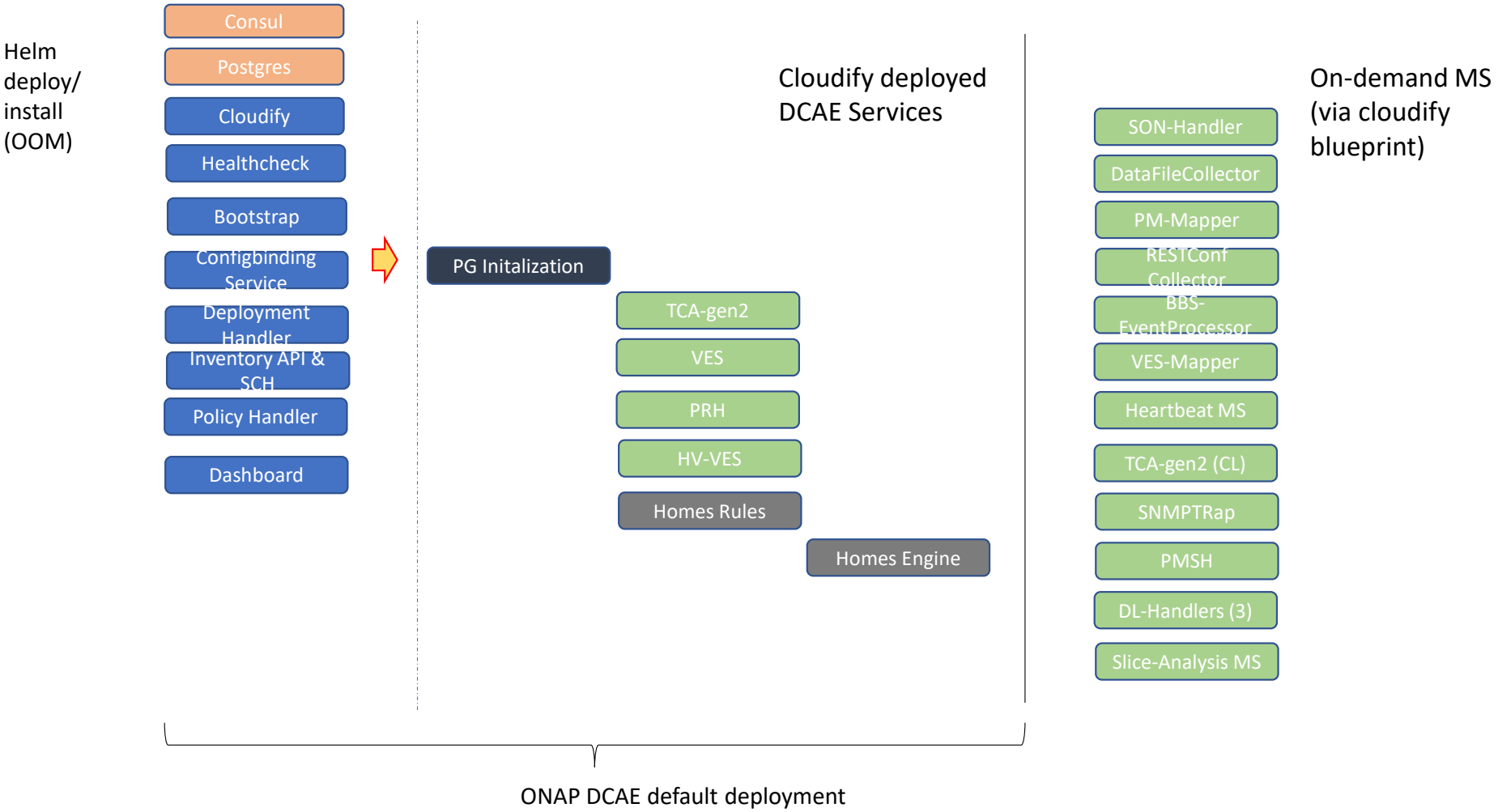
Benefits through Cloudify architecture not fully utilized in ONAP

- Infrastructure management
- Support Hierarchical and distributed deployment (with central and regional/Edge site)
- Model driven approach enabling design flow integration
- Support containerized and VM based workload deployment on heterogenous cloud environment
- Supports service composition design (flow based) and instantiation of multiple related mS
- Dynamic DMAAP MR/DR provisioning capabilities part of orchestration.

Challenges

- Adds complexity on development (platform) due to cross component impact within DCAE platform
- Tight coupling with Cloudify orchestration complicates onboarding and deployment integration (k8s plugin <-> blueprint-gen)
- Community adoptions not diverse
- Security patches, ONAP compliance, S3P goals dependent Cloudify support
- Kubernetes and Cloudify state consistency

ONAP DCAE Deployment



ONAP Community Request

Align with rest of ONAP deployments for Helm

Remove second-level orchestration for DCAE Service components

DCAE Transformation Goals

Decentralization of platform function

Remove centralized external Config Store

Remove Cloudify centric approach

Adopt industry standard and tools

Facilitate easier onboarding and deployment of DCAE services

CI/CD based workflow automation

Pros

- Simplified architecture
- Connectivity on distributed multisite deployment
- Address latency and throughput concerns
- Moving toward Cloud Native option through broader open source community support

Cons

All DCAE Service component impacted with migration

Transformation Impact for DCAE Services

Application Configuration Management	Deployment	Policy Interaction	DMaap Topic provisioning	MOD (Platform)
• Microservice employing Configbinding-Service API's for configuration fetch from Consul need to be updated to support config retrieval via K8S Configmap	• Helm chart creation for all services with configuration defined as resource definition under helm (Management of Helm charts in ONAP to be discussed with OOM)	• Switch either to SDK or sidecar container to periodically fetch and retrieve active policy configuration into application container	• Integration via K8s operator for MS require secure dynamic AAF based topic • Impact of Istio/Service mesh to be assessed • Use of Native/Kafka integration for DCAE MS	• Onboarding, Deployment & Catalog Management with helm support

ONAP CI integration

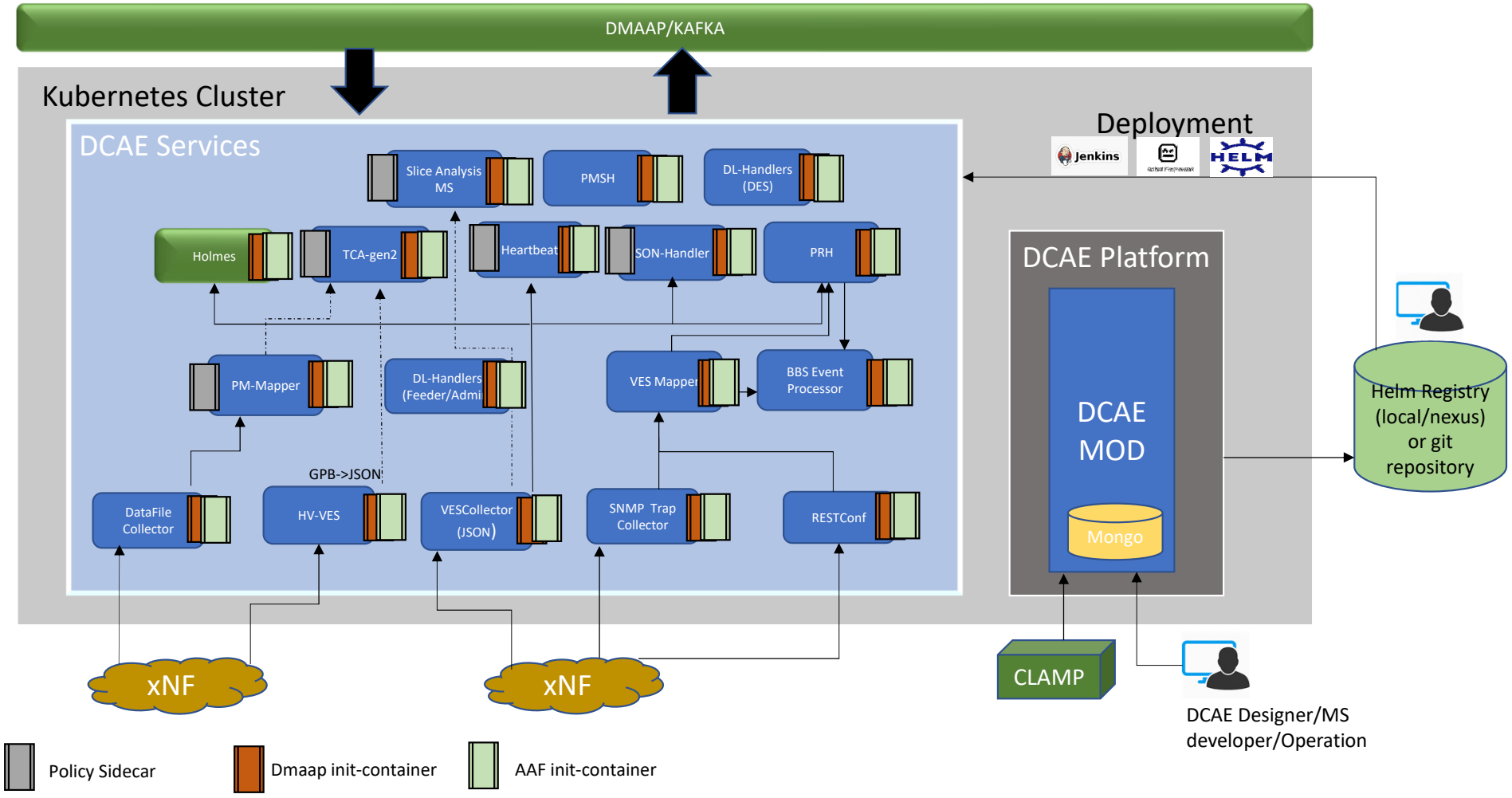
ONAP Phasing Plan (Proposal)

Phase 1 (H release candidate)
- Introduce framework/CI pipeline for supporting target architecture
- Build standalone features for Helm integration
- Design for transformation feature/work as POC

Phase 2 (I release candidate)
- Pilot certain DCAE service components to leverage new feature
- Harden DCAE-MODv2 for helm support and CI for dynamic deployment

Phase 3 (J release)
- Migrate all other DCAE services to helm
- Retire Cloudify/associated platform components

ONAP DCAE Architecture (FMO)



ONAP H release candidate

- Cloudify remains primary orchestration for dynamic deployments (MOD/CLAMP flows)
- Create repo/folder structure for hosting helm charts (within DCAE Components)
- ONAP CI integration for helm chart build and push into ONAP/nexus (dependency on oom/common) and local gating
- Migrate bootstrap service components to Helm (continue Consul/CBS if required)
  - VESCollector, TCAgen2, Holmes, HV-VES, PRH
  - Design configuration management for service component via ConfigMap
- Build sidecar/init container features - Policy*, Dmaap
- DCAE MODv2 Enhancement for Helm support
- Deprecate SCH (to be confirmed with Clamp)

ONAP Cross project impact

- OOM
  - LF nexus integration for hosting Helm chart & Versioning
  - Helm deploy from Nexus charts for dynamic Services (after main ONAP)
  - Support of K8s operator for DMaap topic/feed provisioning
  - OOM service for supporting on-demand deployment

- CLAMP/Policy
  - Design integration through MOD for Helm deployed component
  - Deployment integration through MOD (for Helm flow)
  - Helm override support in CLAMP GUI

- DMAAP
  - DMaap Operator Support (OOM/DCAE/DMAAP – TBD)
    - Support for Native/Kafka integration?
  - Unauthenticated topic supported / feed need DMAAP
    - Data-router dynamic access control for subscriber
  - Requirement for Topic/feed in ONAP (AAF independence)

Call for Support

- ONAP CI/CD integration for helm chart build from DCAE repository
- Helm chart migration of DCAE bootstrapped service
- Building sidecar/init container functionality
  - Dynamic Topic/feed (DMAAP) provisioning through helm & K8s operator
  - Standardized Configuration management
  - Policy sidecar (AT&T working on prototype)
- DCAE MOD evolution for Helm based components onboarding & design

ONAP Future release

Phase 2 (I release candidate)

- **New services introduced into ONAP/DCAE will be deployed on cloudify independent path**
- Deprecate DMaap Plugin
  - Migration DFC and PM-Mapper to use new Helm/K8s operator based Dmaap topic/feed provisioning
- Migrate bootstrap service components to leverage sidecar/init-container feature
  - TCA-gen2 to leverage Policy side-car
- Migrate bootstrap service components to support Configmap driven config management
  - VESCollector, TCAgen2, Holmes
- Harden DCAE-MODv2 helm support and CI integration for dynamic deployment*

Phase 3 (post I release)

- Migrate all remaining services to Helm w/sidecar and init container
- Deprecate all DCAE Cloudify based platform components