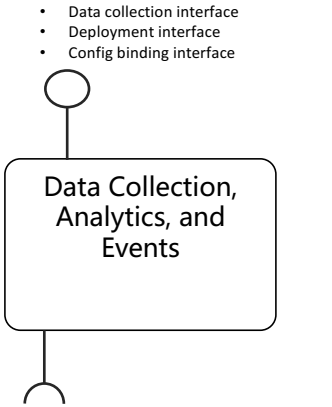
ONAP R2 DCAE Architecture Review

Data Collection, Analytics, and Events



Definition:

DCAE is the ONAP subsystem that supports closed loop control and higher-level correlation for business and operations activities. DCAE collects performance, usage, and configuration data; provides computation of analytics; aids in trouble-shooting and management; and publishes event, data, and analytics to the rest of the ONAP system for FCAPS functionality.

Provided Interfaces:
- Interface 1: Data collection interface (provided by DCAE collectors, consumed by VNFs and others)
  - Interface for various FCAPS data entering DCAE/ONAP.
- Interface 2: Deployment interface (provided by DCAE Deployment Handler, used by CLAMP and other northbound applications/services)
  - Interface for triggering the deployment and changes of a control loop
- Interface 3: Configuration Binding Service
  - Interface for querying the information of the services that are registered to DCAE Consul

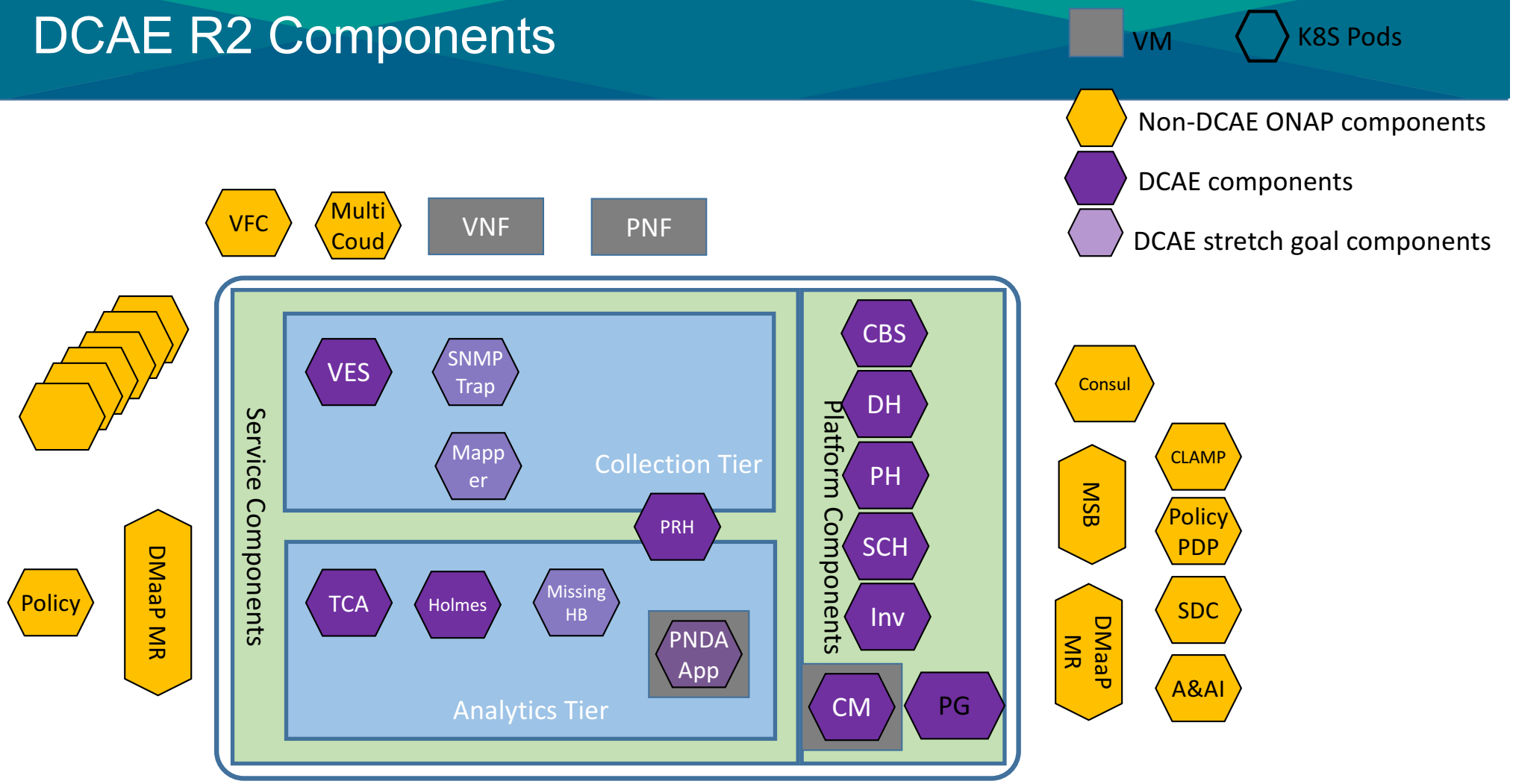
Consumed Interfaces:
- Interface 1: Data movement platform interface (provided by DMaaP)
  - Interface for data transportation between DCAE subcomponents and between DCAE and other ONAP components
  - This interface can also be used for publishing events to other ONAP components.
- Interface 2: Data enrichment interface (provided by A&AI)
  - Interface used by DCAE collectors and analytics for querying A&AI for VNF information for the purpose of enriching collected raw data by adding information not contained in original data.
- Interface 3: Service model change interface (Provided by SDC)
  - Interface for DCAE Service Change Hander fetching control loop models and model updates.
- Interface 4: Policy interface (Provided by Policy)
  - Interface for DCAE Policy Hander fetching configuration and operation policies on control loop and control loop components from Policy.

Consumed Models: TOSCA models descripting control loop construction (e.g. collection and analytics apparatus)

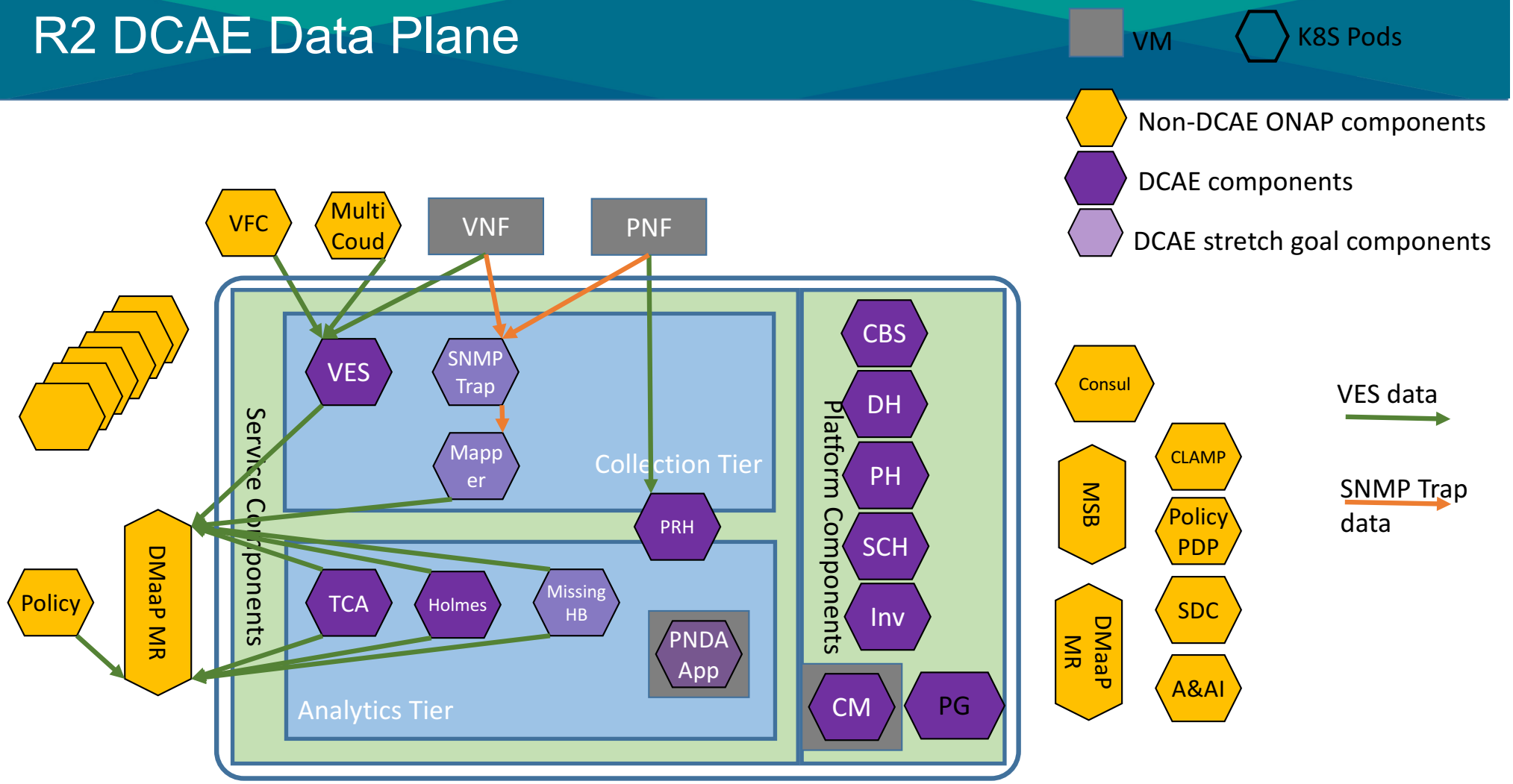
Overview

- Delta since R1
  - Changes for core components needed for supporting R2 use stories
    - Moving to container/Kubernetes
  - New component needed for R2 use stories (5G)
    - PNF Registration Handler for PNF onboarding
  - Stretch goals, additional components expanding DCAE collection and analysis portfolio, but not needed for R2 use stories.
    - Analytics
      - PNDA
    - Collection
      - SNMP trap collector
    - Microservices
      - Mapper
      - Missing heartbeat
- Modeling
  - Data modeling
    - VES
  - Component modeling
    - TOSCA

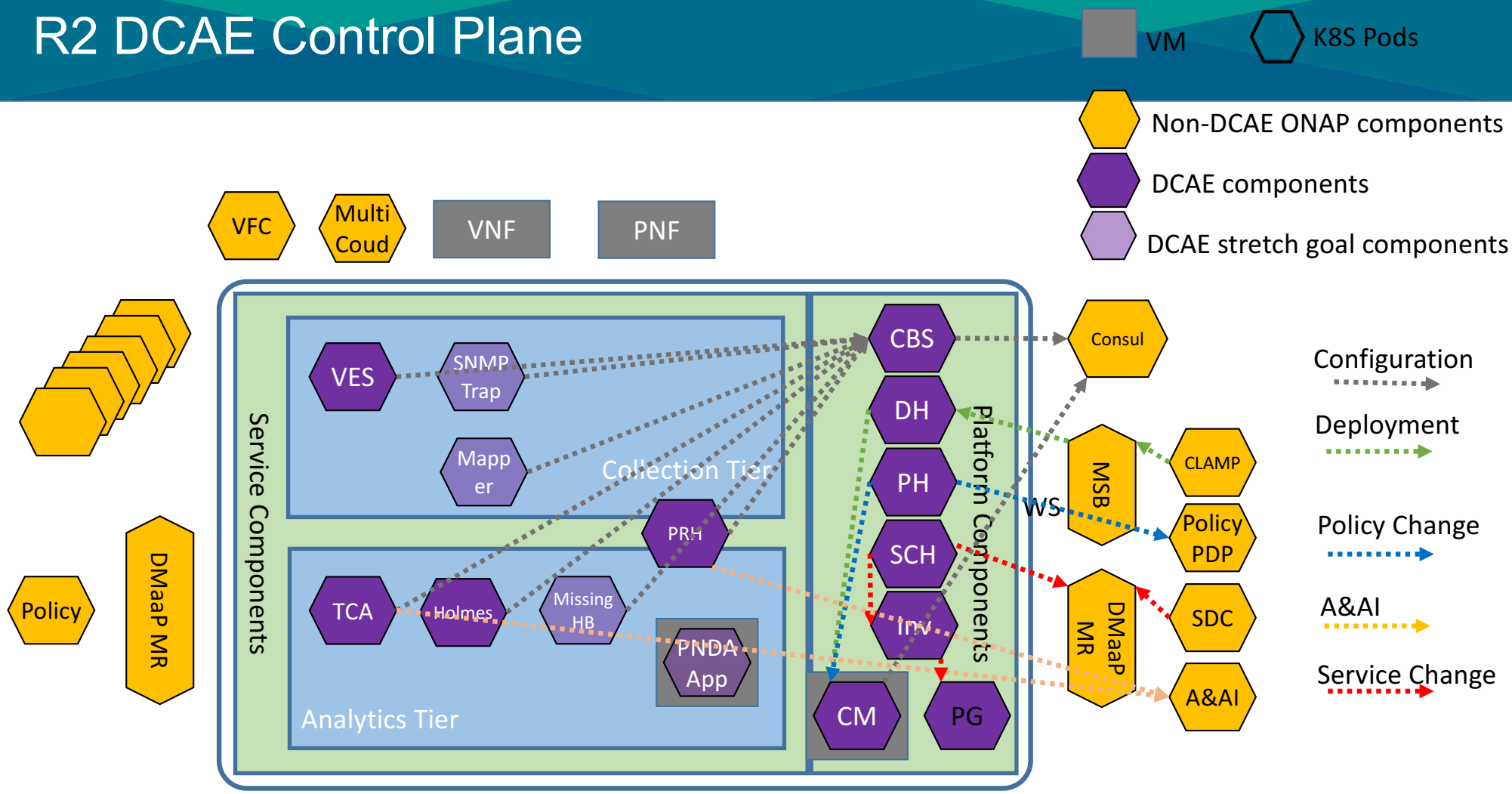
DCAE R2 Components



R2 DCAE Data Plane



R2 DCAE Control Plane



DCAE S3P

- ONAP DCAE developed components will attain R2 platform maturity goals by containerization and container composition into Kubernetes pods/services.
  - Component resilience will be supported by Kubernetes resilience support
  - Scalability
    - Stateless platform and service components are individually scalable by scaling Kubernetes ReplicaSet
      - CBS, DH, PH, SCH, Inv, VES, PRH
    - Approaches for stateful components
      - Pushing states to scalable stores: ONAP Consul cluster, Postgre Database
      - Pushing states to persistent volume (assuming the underlying technology is cross cluster)
      - Individual scalability approach
        - VES-TCA scalability can be supported by scaling flows (collector-analytics pairs), --each flow is associated by its own DMaaP topic.
  - Manageability
    - EELF logging
    - Filebeat sidecar container packed with function container for shipping logs to centralized ELK stack
  - Security
    - Badging in progress
    - SONAR: one repo between 30 and 50%, rest above 50%
    - CLM: 2 dependencies with security vulnerabilities remaining to be addressed
  - Performance and stability
    - Method identified and partially implements
  - Usability
    - Documentation updates in progress

DCAE APIs

- VES:
  - https://git.onap.org/dcaegen2/collectors/ves/plain/swagger_vescollector.yaml
- Deployment Handler
  - https://git.onap.org/dcaegen2/platform/deployment-handler/plain/deployment-handler-API.yaml
- Config Binding:
  - https://git.onap.org/dcaegen2/platform/configbinding/plain/config_binding_service/swagger/swagger.yaml
- Internal APIs
  - Inventory API
    - https://git.onap.org/dcaegen2/platform/inventory-api/plain/swagger_inventory.yaml

DCAE R1 Architecture

DCAE API Calling Directions

External
Data Plane
Control Plane

Internal
Data Plane
Control Plane