ONAP R2 Proposal for
Improved Control Loop Design & Configuration

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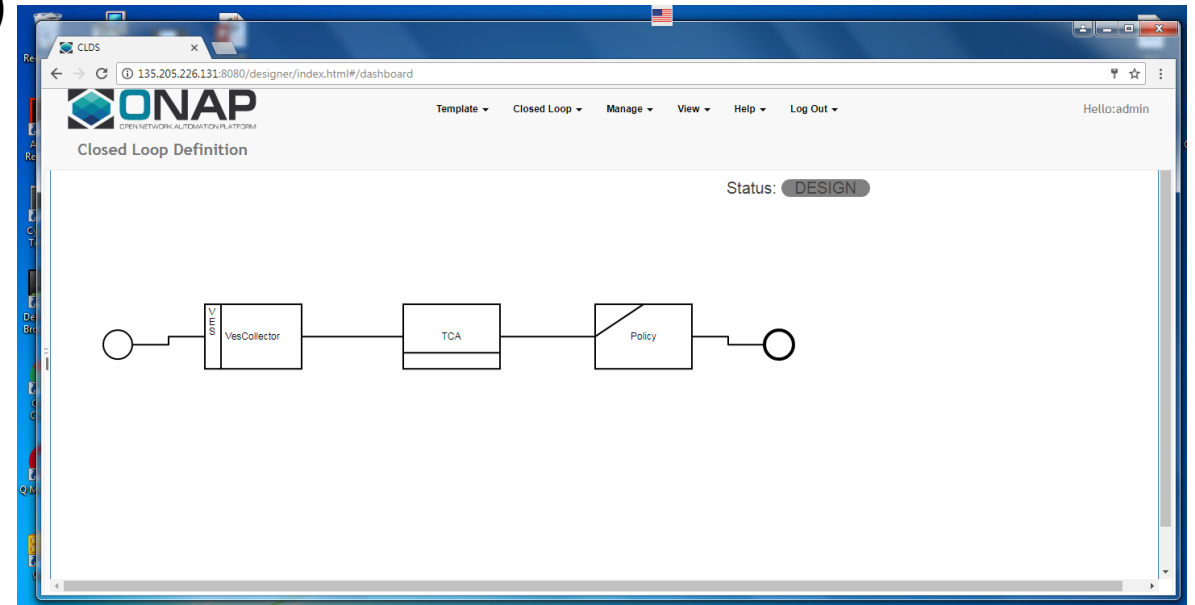
ONAP R1 Control Loop Design & Configuration

ONAP R1 uses the CLAMP Designer for designing and configuring Service Assurance Control Loops

- Can support End-to-End flow (collector→analytics→actions)
- ONAP R1 supports vCPE, vDNS, vFW with TCA
- ONAP R1 supports vVoLTE with Holmes

ONAP R1 is not yet fully automated and fully configurable

- VES Collector is pre-deployed and not yet policy-configured
- DMaaP topics are pre-assigned (not configured)
- TCA is deployed on-demand by the DCAE Controller
- Holmes is pre-deployed
- CLAMP templates are manually created, in advance

CLAMP Designer

Service Assurance flow for vCPE, vDNS, vFW

VNF → VES Collector → DMaaP → Threshold Crossing Alert → DMaaP → Operational Policy (Actions)

Service Assurance flow for vVoLTE

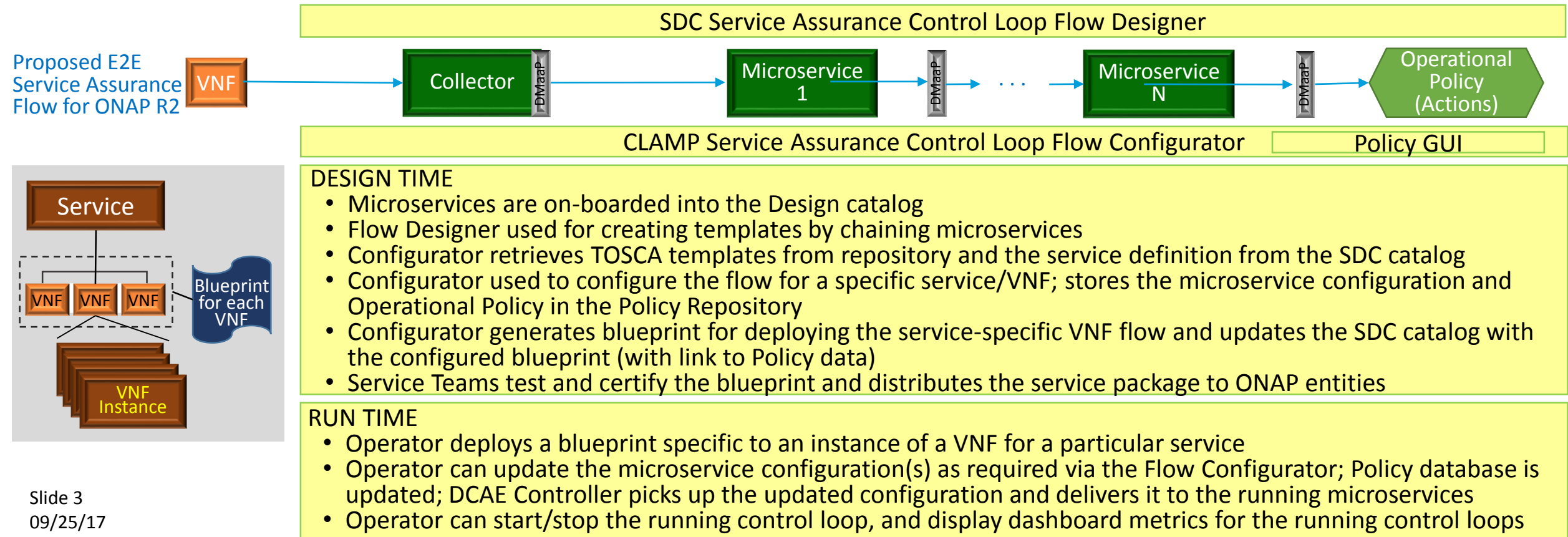VNF → VES Collector → DMaaP → Holmes → DMaaP → Operational Policy (Actions)

R1 CLAMP Designer supports the configuration of a subset of DCAE microservices (collectors and analytics) in pre-defined flows, plus the configuration of the selected Operational Policy. The flow model and configuration are forwarded to the DCAE Controller for instantiating and configuring the DCAE microservices.

ONAP R2 Proposed Control Loop Design & Configuration

ONAP R2 should use the <u>SDC Flow Designer</u> for designing Service Assurance Control Loops (collector→analytics→actions) **and the <u>CLAMP Flow Configurator</u> for configuring Service Assurance Control Loops**
- The Flow Designer and Flow Configurator will be integrated
- The Flow Configurator and Policy GUI will be integrated
- The Flow Designer and Flow Configurator will be accessed from the SDC Design Platform
- The Policy GUI will also be accessed from the SDC Design Platform, for its role in configuring Service Delivery policies
- All UIs will be **based on the SDC SDK**. Programmatic interfaces will be available as an alternative to the GUIs.

SDC Service Assurance Control Loop Flow Designer

Proposed E2E Service Assurance Flow for ONAP R2

VNF → Collector [DMaaP] → Microservice 1 [DMaaP] → ... → Microservice N [DMaaP] → Operational Policy (Actions)

CLAMP Service Assurance Control Loop Flow Configurator | Policy GUI

DESIGN TIME
- Microservices are on-boarded into the Design catalog
- Flow Designer used for creating templates by chaining microservices
- Configurator retrieves TOSCA templates from repository and the service definition from the SDC catalog
- Configurator used to configure the flow for a specific service/VNF; stores the microservice configuration and Operational Policy in the Policy Repository
- Configurator generates blueprint for deploying the service-specific VNF flow and updates the SDC catalog with the configured blueprint (with link to Policy data)
- Service Teams test and certify the blueprint and distributes the service package to ONAP entities

RUN TIME
- Operator deploys a blueprint specific to an instance of a VNF for a particular service
- Operator can update the microservice configuration(s) as required via the Flow Configurator; Policy database is updated; DCAE Controller picks up the updated configuration and delivers it to the running microservices
- Operator can start/stop the running control loop, and display dashboard metrics for the running control loops

Service
VNF VNF VNF
Blueprint for each VNF
VNF Instance

Proposal for ONAP R2 Control Loop Design & Configuration

- **Define a unified and role-based user experience to**
    - Establish identification/authentication and role-based access via the ONAP Portal
    - Define Control Loop templates using the Flow Designer. Note that it must be possible to define "sub-flows" as re-usable templates, and to include those sub-flows in larger flows.
    - Select & configure templates applicable for a service using the Flow Configurator
    - Update configuration for a service as necessary using the Flow Configurator
    - Manage the Control Loops in the Control Loop Cockpit
    - Provide seamless access to the Flow Designer/Flow Configurator/Control Loop Cockpit as allowed by role

- **Provide unified repositories for artifacts**
    - Design Catalog holds the microservice and Operational Policies metadata needed to support Control Loop design
    - Design Catalog holds the versions of Blueprints and Service Definitions
    - Policy Repository holds the configuration data for microservices and Operational Policies, including both vendor recommended configuration/policy (default values for VNF configuration) and the configuration values selected by the Service Designer or Operations using the Flow Configurator
    - DCAE Controller maintains information about the instantiated Control Loops
    - CLAMP Repository maintains Control Loop status information

Summary of the Enhancements for Improved Control Loop Design & Configuration

- **DCAE microservices** and **Operational Policy templates** will be registered in the SDC Design Catalog and their configurable attributes will be registered in the Policy Repository

- **Flow Designer** will support these capabilities for Defining Control Loop Templates:
    - Ability to create generic (service/VNF independent) Control Loop templates, where microservices have multiple inputs/outputs
    - Store all Control Loop Templates in the SDC Design Repository
    - Produce a TOSCA file describing the Control Loop Templates to be consumed by the Flow Configurator

- **Flow Configurator** will be enhanced to support these capabilities for Configuring Control Loops:
    - Integrate the CLAMP Designer with SDC using the SDC SDK (e.g. as a tab in the SDC GUI, alongside the Flow Designer tab)
    - Ingest the TOSCA files from Flow Designer that represent the configurable Control Loop templates
    - Render a graphical display of the template flow
    - Display the configurable attributes for each microservice based on the information uploaded by the microservice developer
    - Suggested values provided by the VNF/VNFC vendor (VNF registration file) can be shown as vendor recommended configuration
    - Support setting and updating the values of each configurable attribute of the microservices and Operational Policy
    - Store the versioned configuration information in the Policy Repository
    - Store the Configured Control Loop Blueprints in the Design Catalog (with linkages to Policy Repository)

- **CLAMP Cockpit** will enable monitoring and management of the Control Loops

- **DCAE Controller** will be enhanced to support these capabilities for instantiating & configuring Microservices:
    - Manage the deployment of microservice instances as necessary to support throughput, response time, or other requirements
    - Deliver initial and updated configuration to microservices, including delivering consolidated configuration information where the configuration of a running microservice instance must be updated to support additional VNFs/services
    - Maintain status of the instantiated Control Loops

- Business As Usual, in ONAP R2 **Policy Designer** will be used for defining Operational Policy templates, for defining Guard Rail policies, and for Service Design & Instantiation

- **Service Assurance control loop Use Cases** must support the new roles for Flow Designer and Flow Configurator

Backup