



Casablanca Platform Enhancements to Support 5G Use Case Architecture Review

5G Use Case Team

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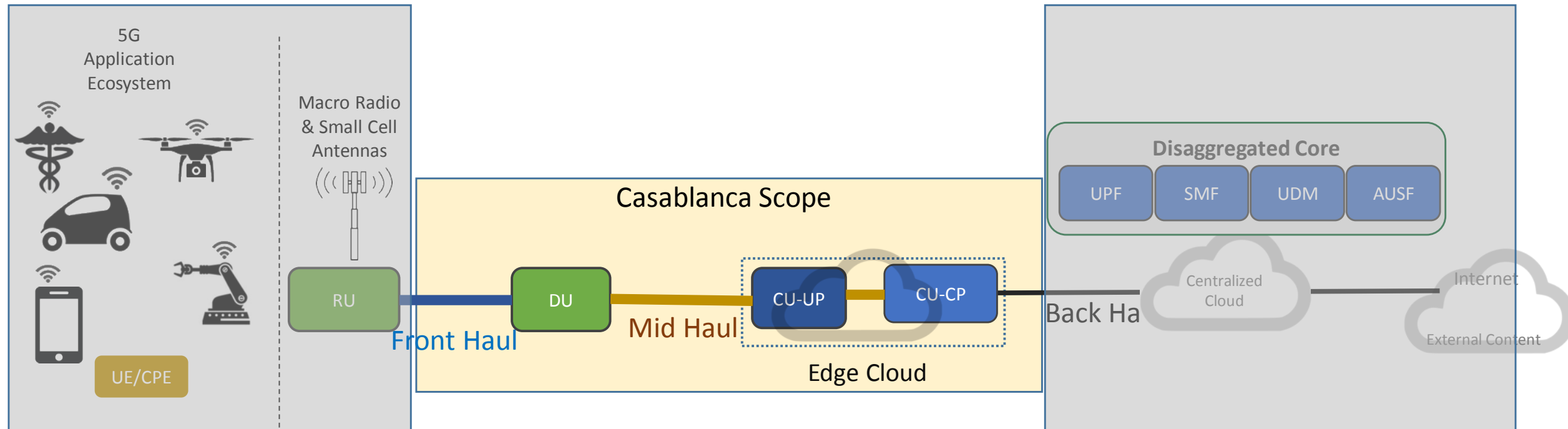
Contributors:

Supporting Companies



And Others

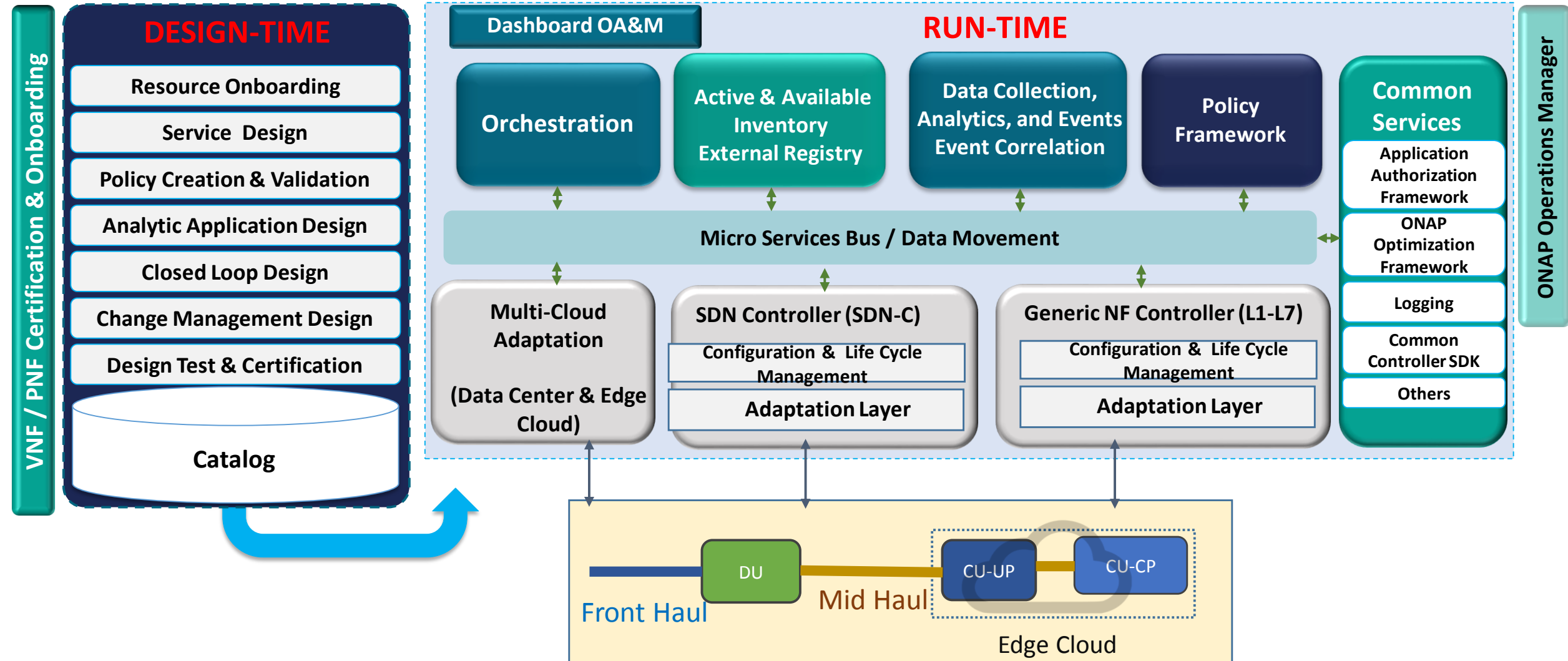
5G Network Architecture & Casablanca Scope



RU – Remote Radio Unit
CU-UP – Centralized User Plane
UPF – User Plane Function
UDM – Unified Data Management Function

DU – Distributed Unit (5G Base Unit)
CU-CP – Centralized Control Plane
SMF – Session Management Function
AUSF – Authentication Service Function

5G Network Architecture & Casablanca Scope



Casablanca Enhancement Summary:

- Enhance ONAP Platform to deploy hybrid 5G Radio Network (PNFs & VNFs)
 - Expand Packaging standards to include PNFs
 - Enhance VNFDSK to support PNF packages as well (depends on 1)
 - Enhance SDC to support PNF onboarding and hybrid network design (using PNF / VNF)
 - Need a way to model in SDC the “Service Instantiation” sequencing relationships that SO must enforce for PNF service instantiation.
 - Add PNF Plug-n-Play to auto register newly installed PNF
 - Enhance SO to support decomposition of Services that include VNFs and PNFs
 - Support for Edge deployment (e.g. CUs) – Edge Cloud Automation
 - Expand ONAP controllers by adding wireless service yang models, network yang models and service logic to ONAP.
 - Add common reusable logic to CCSDK to support wireless
 - Support a single controller persona to support L1-7 network configuration and lifecycle management for 5G network elements
 - Integrated controller configuration design tool to capture L1-7 configuration data for radio network elements
 - Enhance DCAE for near real-time (order of seconds) streaming performance data collection
 - Enhance DCAE for Bulk performance data collection
 - Introduce Real-time streaming analytic platform
- OOF enhancements for optimal placement of edge resources & Framework Enhancements to implement selected network optimization (e.g. PCI assignment)

PNF PnP Enhancements

TOPIC	DESCRIPTION
PNF Registration Handler (PRH) enhancements	Define a New VES Event Domain for PNF registration with the corresponding support in DCAE VES Collector, DMaaP and PRH
SDC Enhancements	Enhance SDC to support PNF onboarding and hybrid network design (using PNF / VNF) with generic workflow to instantiate PNF (i.e. put it in service)
SO Workflow enhancements	Enhance SO to support model driven dedicated workflow for PNF elements
Service Configuration Enhancements	Add needed artifacts in CCSDK to support Radio / Microwave configuration, PNF discovery and registration support
Security enhancements	Authentication and Certificate support for PNF, including registration event and data collection (fault and performance)
Modeling enhancements	Enhance ONAP information and data model to fully support 5G PNF elements, including inheritance and PNF sharing characteristic
PNF onboarding and packaging	Define PNF Package, PNF package validation and onboarding enhancements

Service Configuration Enhancements

TOPIC	DESCRIPTION
Enhance CDT tool to support 5G and integrate into SDC	Integrate App-C focused CDT tool into SDC and enhance it to support 5G network elements and integrate with L1-7 GNFC
Capture and Verify PNF Software version	Enhance GNFC to capture and verify PNF software version, Enhance A&AI to store PNF Software version
PNF & CU Application Level Configuration	Generate a single ONAP controller persona from CCSDK (called GNFC) to support various 5G network elements (Layer 1 through 7 configuration and management)
Lifecycle management Support	Enhance change management and Close Loop Automation (CLAMP) to support 5G PNF / VNFs

PERFORMANCE ANALYSIS & OPTIMIZATION

TOPIC	DESCRIPTION
Bulk performance measurement (PM) data collection	Enhance DCAE VES collection layer to support periodic (e.g. every 5 to 15 minutes) bulk data collection from VNFs and PNFs. Support both file-based collection and mapping to VES Events for chosen file content
High Volume and Near Real-time streamed data collection of Performance measurements	Enhance DCAE performance measurement (PM) data collection to support near real-time (order of seconds) data. Introduce a high-volume VES collector using a persistent connection (TCP socket), support a new data encoding (GPB). Distribute DCAE collection at the cloud edge (for scalability)

Optimization Framework Enhancements

TOPIC	DESCRIPTION
Optimal placement of vNF	Placement of Mobility Virtual Network Elements (CUs) across the highly distributed edge clouds is a fundamental requirement. Service Providers must also optimize the performance of the 5G RAN in real-time.
Optimization problem formulation	Ability to model the problem as a constrained optimization problem, that is driven by policies – Potential use case examples: formulation of optimization problems at various levels: Customer (e.g. provisioning), Service (e.g. slice optimization), Network (e.g. Routing, problems at the network planning level), Infrastructure (e.g. Placement) & Resource (e.g. License)
Optimization problem solving	Ability to use and deploy appropriate analytics, algorithms and solvers to solve the problem in acceptable time frames at various levels: Customer, Service (e.g. Slice Optimization Analytics), Network (e.g. SON network planning analytics), Infrastructure (e.g. Placement) & Resource



ONAP

OPEN NETWORK AUTOMATION PLATFORM

Thank You!