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Oracle Communications 5G Core combined Routing and Selection Solution brief

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Public

Purpose statement

This document provides an overview of Oracle Communications 5G Core combined Routing and Selection, included in release 1.0. It is intended solely to help leading tier- 2 operators, MVNOs, or MVNEs having lower subscribers base of 1M or less, assessing the business benefits of upgrading to 5G and planning transition to 5G SA.

Market dynamics

The 5G standalone (SA) has still not yet reached the widely-anticipated acceleration phase. Few of the factors responsible for the slow pace of 5G SA are as below:-

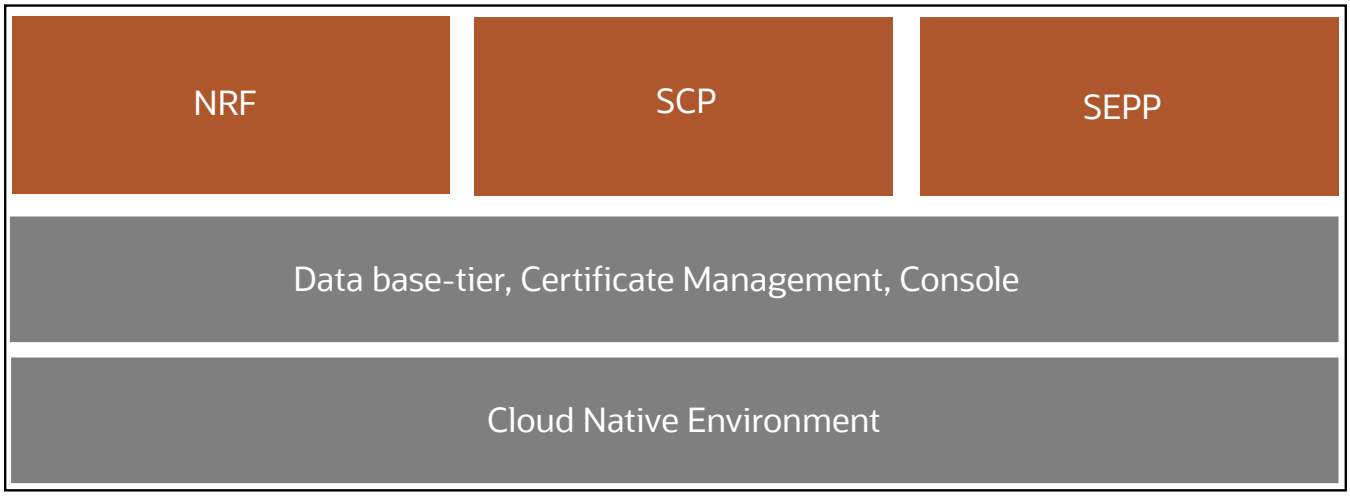
- Persistent challenges of investment in 5G core.
- Migration from legacy network.
- Rising fuel costs and network traffic growth.
- Linking finances with sustainability, that is loan linked to carbon offset.
- Obligations associated with the spectrum allocation.

There are also other key areas for consideration such as, whether the network is robust enough for future growth, is the signaling solution cost effective, have the regulatory compliances been met etc. Operators need an energy efficient lower OPEX and CAPEX solution which can support them for transition to 5G and enabling them to leverage 5G potential to provide new customer experience through best of breed differentiated capabilities.

Oracle Communications 5G core combined Routing and Selection solution overview

To meet these challenges Oracle has combined 5G core Signalling and Routing Network Functions without compromising their individual capabilities with lower Total Cost Ownership(TCO). The solution is scalable, future proof, and has highly differentiated best of breed functionalities. This solution also comes with reduced carbon foot-prints.

Figure 1. Oracle Communications 5G Core combined Routing and Selection functional diagram



It includes minimum required Control Plane components necessary to launch 5G Core- NRF, SCP and SEPP all pre-integrated and ready to serve various other domain Network Functions communication. These NFs share components like Cloud Native Environment, Data base tier, Certificate Management and Console. The combined

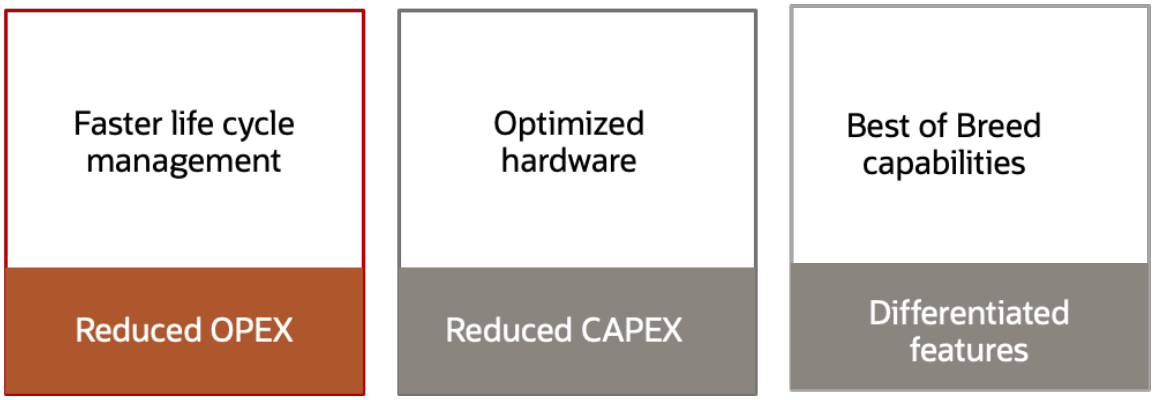
solution optimizes the cost compared to independent individual NFs deployment. The pre-tested solution supports ensuring faster time to market.

Value proposition of combined Routing and Selection solution

Oracle Communications 5G core combined R&S solution aims to bring down total cost of ownership (TCO) of 5G Core through: -

- Optimizing OPEX by reducing deployment time and life cycle management (LCM).
- Optimizing CAPEX through reduced footprint of hardware and cloud native environment.
- Offering differentiated best-of-breed functionalities of NRF, SCP and SEPP.

Figure 2. Oracle Communications 5G Core combined Routing and Selection with reduced TCO



This combined solution provides a cloud native Routing and Selection framework with complete set of microservices. This solution offers geo-redundancy, single GUI and Console window for operations and maintenance of both NFs and the shared application micro-services, database and CNE applications for ensuring resource efficiency. The solution assists in introduction of new services and platforms in an automated and more secure manner within a multivendor and multi-cloud environment and offers insights into network traffic through analytics and troubleshooting tools.

Reduced OPEX

OPEX reduction aims to simplify necessary diligence required by the operator for application management and speed up manual processes. OPEX optimization has been accomplished through automating software life cycle management, including NF installation, upgrade, rollback, terminate and scaling of the application. Industry standard tools like CD Flux or Argo CD have been integrated for LCM.

Configuration management has been leveraged through OPEX optimization. In case, application misbehaves due to multiple changes in the configuration, rollback can be triggered to a previous working configuration.

Reduced CAPEX

CAPEX reduction has been achieved without compromising best of breed capabilities of individual Network Functions. NF specific resources are optimized towards the lower subscriber scale. Combined NFs are sharing common components such as Console, Geo-diverse data layer and Certificate Management for enhancing efficiency of operation and improved time to market.

Differentiated Routing and Selection NFs capabilities

In 5G core combined R&S solution, each NF is 3GPP compliant and built upon CNCF principle. Every NF has a distributed design, independently scalable and can be integrated with Analytics tools to provide deeper insight. In addition to being highly resilient, they are also built upon zero trust framework.

- Oracle Communications NRF enables effective NF selection through geo-replication capabilities enhancing network resiliency. There is no impact on network services even in case of multiple NRF instances outage.
- Oracle Communications SCP is a category inventor and pioneer in SCP market for indirect 5G Core SBI communication. It simplifies operational complexities through automatic dynamic routing by auto-learning network topology. It has robust multi-level congestion and overload control features which enhances network resiliency and avoid any service outage. It provides enhanced visibility into the core network through rich 5G aware metrics along with analytics-based traffic feed.
- Oracle Communication SEPP provides secured inter- public land mobile network (PLMN) SBI communication for roaming subscribers. It supports different deployment models – MNO SEPP, hosted/outsourced SEPP and Roaming Hub /Service Hub SEPP. It includes built-in FS.36 compliant Signaling Firewall and features to mitigate roaming signaling security attacks.

Oracle DBtier, Certificate Manager, Console and CNE

All these NFs and the common components in the solution follow a micro-service architecture where each micro service can grow independently. The solution has multiple levels of redundancy and deployment optimisation is achieved using K8s. The solution has a robust monitoring and observability system that helps in maintaining the efficiency.

The Oracle Cloud-Native database (DB) tier is the geo-diverse database layer provided as part of every Oracle Communications 5G core Network Functions, which is independent of Oracle Communications Cloud Native Environment. It will be the same when deployed in other CaaS, and doesn't require an extra license. Cloud-Native Database tier plays a key role where all 5G NF micro-services are stateless. It ensures fast data access for front-end NFs using in-memory DB technology and real-time geo-replication.

Oracle Communications Cloud Native Core Certificate Management is an automated solution for managing the certificates needed for Oracle 5G Network Functions (NFs), which enables to constantly monitor, renew, or update the certificates based on their validity or expiry period.

The Cloud Native Core Console (CNC Console) is a single screen solution to configure and manage the combined offering in the solution. The CNC Console has two modules. CNC Console Core (CNCC Core) acts as a Graphical User Interface (GUI) or Application Programming Interface (API) portal for NFs and Oracle Communications Cloud Native Environment common services. CNCC Core module is the part of CNC Console that integrates with other cloud native core network functions. CNC Console Identity and Access Management acts as local identity provider and as a broker for external identity provider.

Oracle Cloud Native Environment(CNE) is a fully integrated suite for the development and management of cloud-native applications. Oracle Cloud Native Environment is a curated set of open source projects that are based on open standards, specifications and APIs defined by the Open Container Initiative (OCI) and Cloud Native Computing Foundation (CNCF) that can be easily deployed, have been tested for interoperability and for which enterprise-grade support is offered. Oracle Cloud Native Environment delivers a simplified framework for installations, updates, upgrades and configuration of key features for orchestrating microservices. CNE efficiently manages network at scale by providing resiliency, security, and observability to the 5G core network.

The combined solution is packaged with enhanced security by hardening the Operating System, the Cloud Native Environment platform, Role Based Access Control(RBAC) , Oracle Communications Cloud Native Core Certificate Management . In addition mTLS 1.2/ mTLS 1.3 encryption protocols are implemented at transport layer to keep the data secure while being transferred over a network.

Summary

Oracle Communications 5G core combined Routing and Selection helps CSPs to fully exploit the flexibility and efficiency of the new 5G core network architecture. Oracle Communications 5G core Routing and Selection is designed with cutting edge Oracle engineering, compliant with latest 3GPP release standards and has been deployed in many networks across the globe for tier 1 operators like DISH, BT and Orange. Oracle Communications combines 40+ years of heritage in network experience with cloud innovation to deliver highly secure, robust, and flexible cloud native 4G/5G core network solutions, empowering CSPs to launch the best in breed features and create differentiation in the market by offering world class reliable products.