



Oracle 5G Next Generation Core

The evolution to a 5G core is different from previous mobile network generations, since 5G introduces a number of innovative and disruptive networking paradigms, many of which had not been applied to mobile networks in the past. Operators will need the right partner to enable them in building a robust and scalable core which can deploy multitudes of network functions independent of the underlying frameworks.

5G NGC INNOVATIONS AND CHALLENGES

5G replaces traditional mobile core network architecture with a new Service Based Architecture (SBA) borrowing heavily from IT networking technologies. SBA introduces REST-based stateless transaction framework as an underlying framework for traditional stateful mobile services. This application of uniquely IT networking technologies to Mobile Services need maturity or “soaked time” in order to resolve any unforeseen difficulties.

Even though control-plane/user-plane separation (CUPS) was introduced in 4G, it takes center stage in 5G. 5G embraces CUPS as an integral part of its core architecture. CUPS requires careful network design in both the control plane distribution as well as transport networking for user plane in order to take the full advantage of its concept. As is, 4G transport data network may not be configured optimally to take full advantage of CUPS.

One of the most exciting concepts enforced in 5G is Network Slicing. Although the concept of dedicated core network is not new and was introduced in 4G as DECOR feature. 5G however, bakes network slicing into its core service. Network slicing is a highly dynamic process involving defining, instantiating and selecting, scaling, and de-instantiating slices. Hence in order to fully support network slicing, numbers of disciplines such as resource and life-cycle management, orchestration, real-time selection and KPI monitoring should be considered.

Oracle's 5G NGC solutions will enable Operators to gradually offer 5G services leveraging their existing 4G core, while also helping Operators to start 5G PoCs to build out a new 5G core.

Service Based Architecture (SBA)

SBA is one of the corner stones of 5G NGC, It applies IT network technologies to mobile services, enabling greater service innovation and offering sizable benefits to Operators. However, the Service Based Architecture is a major departure from previous generations of mobile networks hence Operators need to look deeper and consider whether and how the IT-based SBA can support the needed attributes for telecom services. Oracle Communications is in a unique position to help Operators understand and address these challenges, namely in the areas outlines below:

- HTTP/2 for signaling
- Load balancing
- Traffic prioritization
- Routing selection
- Network function degradation and failures
- Interoperability EPS/5GS & Diameter/HTTP
- Congestion and overload
- Visibility into the core
- Upgrade and maintenance

Oracle is working on solutions to provide operators with congestion control, traffic prioritization, overload protection and 5G-4G interworking, all of which are fundamental requirements in a 5G Core network. This translates to Operators' being able to offer secure and reliable services to their enterprise and consumer customers while meeting service level agreements.

Oracle's 5G NGC vision will fulfill the following areas:

- Routing and selection services
 - Establishing robust, scalable, secure and optimized service-aware routing and selection framework that includes services such as registration and discovery, slice selection and binding support.
- Policy and charging
 - Providing a unique user-friendly policy design and runtime experience to enable Operators to quickly deploy new policies and services while ensuring the reliability of existing services through fully automated test framework. The solution will be flexible enough to manage different domain specific policies and granular enough to manage individual services sufficiently.
- Data management
 - Providing database infrastructure for managing both structured and well as unstructured data within the 5G network.
- Service Level
 - Exposing network functions and 5G services in a secure and reliable way to both trusted and untrusted entities.

Oracle Communications embraces the principals espoused by the Cloud Native Computing Foundation (CNCF) and plans to design and implement its 5G NGC to seamlessly integrate with open source orchestration and automation frameworks as well as a range of popular cloud services sponsored by the CNCF. Oracle 5G solutions will be developed using DevOps principles, designed to support zero-manual-touch management and governed by automated CI/CD workflows.

Based on more than 40 years of core network experience, expertise and market leading best of breed products, Oracle Communications is evolving its core network and cloud solutions for 5G and introducing new functionalities to specifically address the challenges in the 5G core Service Based Architecture (SBA).

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