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Oracle Communications Network Exposure Function (NEF)

Oracle communications NEF is based on CNCF principles -- Making the network capabilities easily accessible for customers and partners to securely innovate on.

Oracle Communications Network Exposure Function (NEF) is a 5G core cloud native network element that securely exposes the network services and capabilities to either third-party applications or the internal Application Functions (AFs) over the Application Programming Interface (API).

Located between the 5G core network and third-party applications or AFs, NEF acts as a centralized point of service exposure to create OTT applications and plays a key role in authorizing all access requests originating from outside 3GPP networks.

Oracle communications NEF in the 5G network

When it comes to 5G monetization it is essential to have a programmable network that can interact with all IoT devices, manage edge connectivity, and introduce new business opportunities through novice services.

Oracle Communications Network Exposure Function is a cloud native micro services-based architecture solution which provides a means to securely expose 3GPP network capabilities to the application function. It enables the external application administrators to customize the network for providing innovative services to their end-users. The applications communicate through the Oracle communications NEF to access the internal data of the 5G core network. The Oracle Communications NEF performs the following functions:

- Facilitates robust and secure exposure of network services, such as voice, data connectivity, charging, subscriber data, IoT, and more to trusted third-party applications or AFs.
- Translates the information received from the AF to the internal 3GPP NFs, and vice versa.
- Provides support to expose information collected from other 3GPP NFs to the AF.
- Monitors user equipment (UEs) related events present in the 5G system and makes the event information available for external exposure. For example, monitoring of user location and services.

“Oracle’s capabilities will essentially serve as the control tower of our network core, enabling our customers to consume software on demand, facilitating the advanced core functions required to power a truly automated network.”

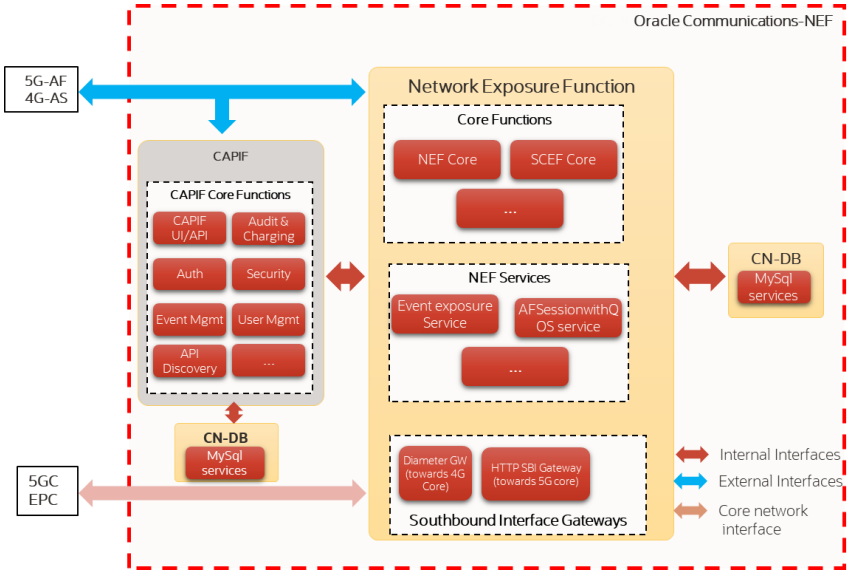
Marc Rouanne
Chief Network Officer,
DISH Wireless

Key Business Benefits

- Drives new use case development
- Secures exposure of Application Programming Interface
- Provides deployment flexibility
- Enables monetization opportunities through new use-cases

Oracle Communications NEF functional diagram

Oracle communications NEF has a distributed architecture which includes common API framework (CAPIF) and the NEF. The hand shaking of 4G Application server or 5G Application Function (AF) requests with the core network is done at the CAPIF. It takes care of authorization, discovery, API invoker, onboarding, managing the AFs, API management and governance.



NEF takes care of the core functions and serviceability functions like logging, tracing, and more. This distributed architecture provides more flexibility with independent scaling.

Features and benefits

Oracle communications NEF is based on the Cloud Native Computing Foundation (CNCF) principles. The prominent features are:

- **Network monetization and service innovation**
    - Allows internal application developers, partners, third-party developers to access 5G core services and capabilities with enhanced security and ease.
    - Provides diverse and distinctive services for different users with the open interfaces of the Service Capability Exposure Function (SCEF) and NEF, to further maximize the value of carrier network resources.
    - Supports background data transfer and scheduled upgrade of devices like smart phones, for multiple devices in multiple industries.
    - Enables 3GPP network exposure services such as location monitoring data from AMF or Gateway Mobile Location Centre (GMLC) which can enable use-cases like asset tracking,
- Supports canary upgrade, that is introducing a new software version into production by gradually rolling out the changes

Oracle Communications solutions and related network functions

- Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)
- Oracle Communications Cloud Native Core, Security Edge protection Proxy (SEPP)
- Oracle Communications Cloud Native Core, Network Slice and Selection Function (NSSF)
- Oracle Communications Cloud Native Core, Network Repository Function (NRF)
- Oracle Communications Cloud Native Core, Policy Control Function (PCF)
- Oracle Communications Cloud Native Core, Policy, and Charging Rules Function (cnPCRF)
- Oracle Communications Cloud Native Core, Converged policy solutions
- Oracle Communications Cloud Native Core, Binding Support Function (BSF)
- Oracle Communications Cloud Native Core, Cloud Native Environment (CNE)
- Oracle Communications Cloud Native Core, Network Data Analytics Function (NWDAF)
- Oracle Communications Cloud Native Core, Network Analytics Data Director

Automated Guided Vehicle in warehouse, fleet management, logistics, connected cars, and law-enforcement, etc.
    - Allows applications to control the Quality of Service of the connection to implement use cases like AR/VR, video streaming, and drone control etc.
    - AF traffic influencing that can be used for all MEC use-cases and dedicated edge with the support of the Session Management Function (SMF) & Policy, e.g., to route traffic to the local User Plane Function.

- **Deployment flexibility**
    - Scale independently due to distributed deployment model of NEF, which has a CAPIF plus NEF as separate functionalities and can be deployed at separate locations.
    - Can be deployed either in Cloud, VM, or Bare Metal as per requirement.
    - Supports multi-vendor deployment with no lock-ins to enable new services.
    - Provides the benefits of CI/CD pipeline and automated testing due to micro-service-based architecture and being cloud agnostics.
    - Enables management and governance of all APIs centrally, which eases the operation and complexity of API management.

- **Enhanced security**
    - Exposes API securely to the AF protecting the integrity of the core network.
    - Onboarding and managing AF are done centrally with a framework for onboarding the application functions and setting the right permission for accessing the network.
    - API management and governance at a central location which makes it easy for setting security parameter.

Summary

Oracle communications NEF has leveraged all the internal expertise in API security, control, and management. Oracle Communications follows a best-of-breed strategy with focus in interoperability helping to mitigate vendor lock-in challenges. Oracle communications NEF has been deployed across the globe for tier-1 operators such as DISH networks.

Oracle Communications combines 40+ years of heritage in network experience with cloud innovation to deliver highly secure, robust, and flexible cloud native 4G and 5G core network solutions. For the best solutions and support, Oracle is a preferred partner that has a dual understanding of 5G core network challenges and the IT challenges that come with a cloud native infrastructure.

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