



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## Feature Work With SDL in Nokia SDM

<sup>1</sup>Swetha V, <sup>2</sup>Dr. Harish G, <sup>3</sup>Dr. Smitha Shekar B

<sup>1</sup>Mtech Student, <sup>2</sup>AssociateProfessor, <sup>3</sup>AssociateProfessor

<sup>1</sup>Department of Computer Science and Engineering,

<sup>1</sup>Dr. Ambedkar Institute of Technology, Bangalore, India

**Abstract** : Nokia introduces the shared data layer as a single common data repository for the cloud by placing subscriber and session data into its own layer VNFs can be focused around only processing business logic making them truly stateless. Consequently NFs become more flexible, scalable and easier to upgrade. The new and simplified cloud architecture makes cloud operation and maintenance easier while Nokia's open api's allow for faster introduction of new services with shared data layer subscriber and session data are readily available anytime and anywhere. Therefore in case of a network failover a new network element can catch up on the established session by retrieving the previously stored session state from the common data repository almost instantly and without service interruption due to the ubiquitous accessibility of user data simultaneous upgrading of multiple network elements is made possible without the need to wait for a maintenance because remaining network elements can simply retrieve relevant data from the shared data layer without service interruption. Nokia shared data layer is the key enabler for cloud optimized ultra robust highly scalable networks preparing cloud native network for future IOT and 5G technologies.

**IndexTerms** - Nokia SDM, SDL, Components of SDL.

### 1. INTRODUCTION

SDM which is the Subscriber Data Management, is analytical functions in telecommunication networks. It helps in 5G and manages all subscriber data. It is used to manage all the data in a single place and the network can be easily expanded and operated. The arrival of 5G and expansion to cloud architectures, the subscriber data services are managed securely and efficiently. Nokia's shared data layer opens the way for a future end-to-end cloud architecture, a must for 5G as the market leader with hundreds of customer networks.

### 2. PRELIMINARIES

The telecom industry and service providers are profits of SDM. The customer's data is integrated into a single database by a service provider. They use artificial intelligence and build predictive analysis. The discovery of subscriber data mainly focuses on the issue for network operators. Therefore, the subscriber data which is saved in non unified distributed architecture. Also it is vendor-specific network elements and services that are more expensive to integrate the data. SDM approach addresses this difficulty by consolidating the subscriber data into a single repository.

#### 2.1 NEED OF SUBSCRIBER DATA MANAGEMENT

Data floats throughout for subscribers in their profiles, multiple networks, applications and billing data. Data segmentation across many locations is the main problem and thus it is disorganized, duplicated and difficult to manage. This leads to high cost and it is based on data management. The data is presented in many systems requiring dissimilar interfaces. Therefore, operators are not able to look at all the subscriber data in a single place, thus it is disabled while the approaches make all-inclusive decisions about their subscribers.

#### 2.2 NOKIA APPROACH TOWARDS SUBSCRIBER DATA MANAGEMENT

Today operators live in a highly competitive market where the boundaries between traditional telecom services and the IT domain are fading. Following these developments the telco industry is actively implementing cloud computing to support continuous innovation and resilience to react to market demands. Nokia takes the next step into helping operators make their virtual network functions leaner and more efficient in other words making them cloud native to enable cloud native VNFs. Based on the SDM market leadership, Nokia uses the same principle to build SDL. Nokia SDM facilitates and provides a centralized, streamlined, high performing system for storing and processing information. SDM assists telecom operators and makes a transition to 5G. At the heart of the 5G Core, it delivers a unified platform to hold up 4G and 5G data.

### 2.3 COMPONENTS OF SHARED DATA LAYER

Nokia's One Network Directory Server into SDL is the main block for the Nokia cloud native core and SDL is the common storage whereas all the data is stored in the applications. Thus, data can be reserved into SDL and it can be accessed by applications which are front end like Policy Control Function, Home Function Register . Cloud Band Application Manager is used to deploy subscriber data layers and it composes multiple instances of VNFs. Cloud-native core supplies the flexibility and as required for the delivery of the high performance, ultra-reliability, and low latency challenged by the 5G and IoT.

The components of SDL are:

- Operations
- Real Time Database
- Notifications
- Telemetry
- Diagnostics
- Discovery

#### 2.3.1 OPERATIONS

Shared data layer operations are organized by OPS. Thus, OPS virtual network function component instance describes the applicable subscriber data layer services in order to manage the operation in an shared data layer virtual network function instance. It also refers to the required functions on the virtual network function component instance services through an internal operability interface.

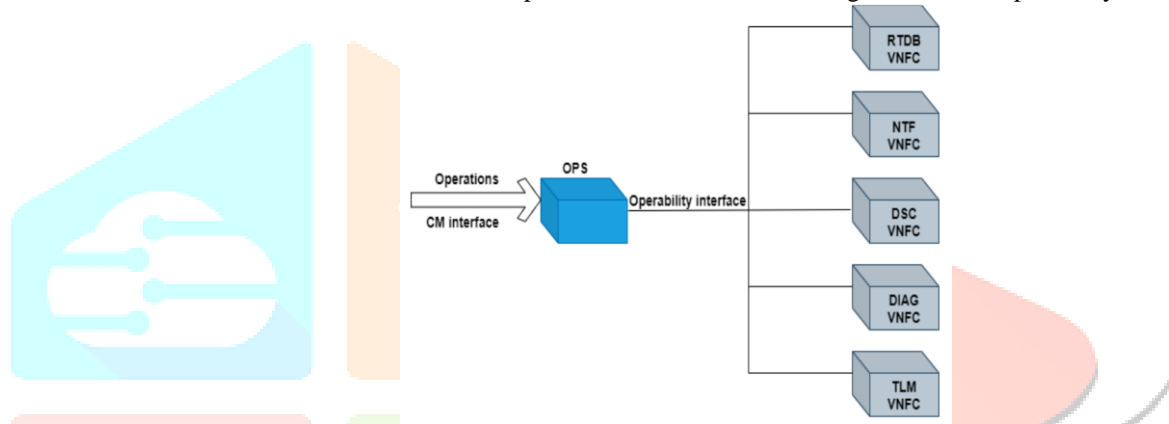


Figure 1.1 OPS role in SDL

#### 2.3.2 REAL TIME DATABASE

Real Time Database service is the main unit of the shared data layer. This service supplies storage, accesses data to any application which are front-end & core VNF. This service is managed to store, distribute and replicate the database content. Also secures the storages and indexes of the applications which are used for accessing the data faster and it supports protocols, this allows applications to access & provides information.

The Functional areas in RTDB services are:

- **Access:** RTDB can be accessed through the LDAP protocol.
- **Indexing:** It is used to route the requests which are accessed by the node that holds the document which is relevant to it.
- **Storage:** It is used to store, replicate documents, and update the index.

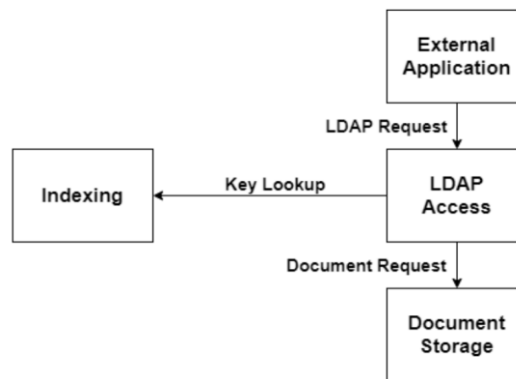


Figure 1.2 RTDB role in SDL

### 2.3.3 NOTIFICATIONS

Notification services are secured shared data layer message delivery networks also highly scalable. NTF can be seeked through the applications and swaps the data which are saved in the Shared data layer also NTF forwards the notification as required.

### 2.3.4 TELEMETRY

TLM service provides the real vision of the Shared data layer. Virtual Network Function supports Shared data layer VNF and instances to network operators and Shared data layer service virtual network function component which illustrates FM and PM. Using the collected data, this service can achieve the features.

- FM -Fault management: TLM service determines fault when the measurement is unusual by sensor data.
- PM -Performance Management: TLM service utilizes the sustained data from the provided set of sensors which builds Performance Management counters and Key Performance Indicators .

Therefore, this service tracks sensors and collects recorded sensor data.

### 2.3.5 DIAGNOSTICS

SDL contains the logs which contain the data about VNFC, report and results. Shared Data Layer produces logs and is responsible for logging services to collect and save the data. Therefore, this consumes more time to maintain, display and scan logs. On a continuous basis, the data can be collected and saved in a single location, if the problem is solved by a centralized logging system.

### 2.3.6 DISCOVERY

Discovery service supplies the exterior user with interface as well as features for discovering the endpoints to access the information. This is operative for finding the service provider for services which we look for. The service provider address is extracted by this service, the site is accessed and can be utilized for seeked service. Therefore, discovery service provides actual time discovery capacity for endpoints.

## 3. METHODOLOGY

The Shared Data Layer, feature work must be designed and the code must be inspected by the chief architect. After the successful testing, the feature design must be promoted. During the first production phase, it is not possible for the software to be completely bug free. The feature release includes more possibility of software faults or bugs in the software because of errors caused by humans. These issues can be achieved by fixing bugs and also by correcting with software updates. These software updates are easy, simple for end users and vary by automatically updating and clicking update icon manually while starting the operating system or applications. Therefore, software testing plays a major role in software maintenance life cycle which determines and improves the software quality.

## 4. RESULTS AND DISCUSSIONS

The feature is developed or implemented based on the customer requirements. The feature must be bug free and deployed after every phase. The components feature can be changed based on the requirements and these changes must not cause failure to the other components. Every change made must be reflected in the database. The separate logs are maintained for the developed feature and the changes made in each component must reflect in the database. Separate tools are required to test the feature. Therefore, the feature is inbuilt and meets the customer requirements.

## CONCLUSION

SDL is the major tool used to centralize the storage for subscriber data. Inclusion to this, while we start the period of 5G as well as IoT, the subscriber idea moves, the devices are connected and enhances the subscribers. Thus, using the items from subscriber data management the app involves unbroken data access and it is specially used while the other cloud service providers save off site data. Thus, the interest is to enable the operators and to centralize the subscriber data by providing space to acknowledge the subscriber task. Subscriber's operations allows the operator to fulfill high individual services like geolocation driven deals and mobile roaming alerts. Basically these operatives cast the information efficiently utilizing subscriber data management. Since we are entering the IoT age, it is necessary to deploy SDM. Therefore, all the devices are connected like coffee making machines, watches, shoes, refrigerator, electronic machines etc. and massive waves for the subscriber data that contains new links.

## REFERENCES

1. Nokia\_Shared\_Data\_Layer\_White\_Paper\_EN.pdf
2. Innovate\_and\_execute\_with\_a\_simplified\_5G\_core\_.pdf
3. SDL overview.mp3
4. OPS & NTF architecture.mp3
5. RTDB architecture.mp3
6. DIAG & TLM architecture.mp3
7. CIT & CC overview.mp3
8. <https://www.nokia.com/networks/core-networks/shared-data-layer/>