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5G: Approach to common network data layer

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5G core networks require a new approach to the management of data, thanks to their service-oriented, cloud-native nature. The 5G standalone (SA) presents a control plane that is significantly enhanced as service-based architecture in which components for policy, authentication, session management, and user management have been disaggregated, ensuring a flexible and open deployment framework.

Operators are moving to the network data layer, including the ability to deploy in slices or at the edge, gaining a unified view of customer data. According to a global survey, more than 50 percent of operators plan to move to a common network data layer across their network functions as operators move to 5G from 4G.

Mobile operators must adopt new thinking, as it is important to evaluate how user data is stored, updated, distributed, and synchronized. This stateful data must be accurate, consistent, and delivered across the network at the right time, which extends beyond resource functions and applications.

Propelled by the race to 5G, telecom operators are heading to cloud-based stateless applications. At the same time, subscribers have increased expectations while OTTs are simultaneously expanding their services. In this elaborate mix, the mobile operators must adopt new thinking, as it is important to evaluate how user data is stored, updated, distributed, and synchronized. This stateful data must be accurate, consistent, and delivered across the network at the right time, which extends beyond resource functions and applications.

Open, cloud native and simplified

The most compelling and flexible data management systems combine a stateless front-end with a database backend. The data, that includes: subscribers, profiles, application and enterprise is the most exquisite commodity to the telecom operator's business and it is important for 5G deployments, mainly because the operator needs to own the data and the tools for its distribution and synchronization.

The credence of a common network data layer to manage and distribute data may not be new, but it is important to consider how much it is practical. In a 5G network, data management and data storage must reflect the rest of the network: it needs to be software-defined and cloud-native.

The telco business needs network functions that centralizes user data and makes it readily available for various network functions. What we have seen is a maturing and detailing of the requirements for operational management, resiliency, data privacy, interoperability and data migration. This points to the implementation of 3GPP standards and the evolution from current network environments.

The key use cases are 5G SA, multi-tenancy, enterprise and network slicing, all of which are driving change. Multi-tenancy is also a business need based on geography, for backup and multiple applications.

One common network data layer

Telecom Operators need data management solutions that can store and expose critical data across all 5G services through open interfaces and support the deployment of multi-vendor and multi-generation interworking scenarios. From a technical perspective, the common requirements on standard interfaces (3GPP or IETF) are balanced today by considerations on interoperability, synchronization and consistency models, data access management, distribution, the scale of access, and management utilities.

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5G applications require robust data models and structures as a foundation for effective network automation and data monetization. A common network data layer should ensure fast on-boarding of new application combined with the operational capability needed for a foundational layer. Next-generation architects need the confidence that such an approach provides toolsets they can use to build out the functions needed for 5G use cases – both technically and from a business perspective.

To on-board multiple applications, if standards are followed and an open system is used, it is practical to combine business and technical considerations with those for network planning on a common network data layer. In the absence of a common network data layer, operators are forced to stay with existing vendors; limit longer-term evolution and approaches to use cases; risk fragmented storage and replication architecture.

Telecom operators should approach common network data layer as a unique opportunity to transform how data is architected for 5G, with the ultimate goal of providing business and operations teams a common approach to data, thus simplifying architecture, taking advantage of 5G network slicing and edge deployment, while provisioning the foundation for core network transition.