

# CDR Analytics on LeanXcale

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## Introduction

Telecom sector is extremely competitive, and it has become a commodity market. This fact forces telecom operators to evolve their tariff plans and obtain insights from their evolving customer base. To address this need, they resort to the tariff analysis at different granularities from customer segment level to individual customers of current and considered tariffs, comparison with the ones of the competition and what-if analysis. Thus, analytics on high volume data (detailed CDRs of a whole year, TBs of data) is needed for business management.

Such analytics assists decision making assessing the potential impact of new offers, identification of target customer segments for the new tariff plans that can benefit from them. They provide a way as well to analyze competition, reduce customer churn, control ARPU, control costs, and increase competitiveness. Currently, such studies are constrained by the increasing volume of data usage, and the number of alternative scenarios that need to be studied.

Such studies become more demanding when the results have to be provided interactively to the customers. Interactivity is necessary for “what-if” scenarios per customer. CDR Analytics thus pushes for more scalable and performant data management.

Another critical insight that can be extracted from CDRs is the relationship across customers and what is their relative role. Some are leaders that influence the decisions of others, that means that losing an influencer will mean most likely to lose all its followers.

## Use cases

The main uses cases of a CDR analytics platform are:

### **Interactive Tariff Simulation**

- Find the best tariff for a customer or a specific subset of them
- Find the best fares that achieve a particular metric
- Compare charges produced by a new tariff with current charges
- Find the effect of changing a specific tariff or a specified set/network of contracts

### **Customer Segmentation**

- Find customers with the most significant difference from their best fare.
- Find difference per customer from his best tariff or any particular tariff.
- Find the average distance of the invoices from the corresponding best scenario per scenario.

### Social Network based

- Find customers with a particular (leaders or followers) according to their social network features (interpreting their call pattern) and the most appropriate tariff to propose to them.
- Find through the social network interpretation, numbers which are non-subscribers; calculate the impact on revenue in case the calls to these numbers become on-net (i.e., they switch their network to the operator's network)

## LeanXcale disruptive technology

A CDR analysis platform needs to be created on a database that fills the following technical needs:

- High-rate insertion to be able to intake new set of CDRs (e.g. the CDRs of a full year) in a matter of seconds to calculate scenarios per segments or customers.
- Analytical capacities to calculate the needed KPIs that are frequently based on complex queries that operational or NoSQL databases need too much time to perform.

LeanXcale was founded under the idea of the **database technical excellence**, trying to sort out all the problems that enterprise databases have. This philosophy is in LeanXcale DNA, and it is embodied in all database aspects, being the origin of more than twelve disruptive technologies. The most relevant ones for this scenario are:

- The key-value/SQL dual interface enables to ingest data very fast and efficiently. Data can be ingested through the key-value API thus saving the overhead of SQL processing. This approach can result in significant performance improvement when the workload has a high data ingestion as it happens with CDR analytics. It also provides the ability to ingest data very fast and be able to use a large cluster to ingest the CDRs of one year in seconds.
- Bidimensional partitioning enables to store KPI time series at very fast rates by maximizing cache efficiency. This partitioning enables to have as primary key the most convenient column, while still keeping only the latest data ingested in memory.
- Semantic concurrency control enables to generate aggregates in real-time as data is ingested. In this way, most of the aggregate analytics queries required by CDR analytics becomes single row queries, highly reducing the footprint of the hardware needed to perform CDR analytics.
- Ad-hoc analytical queries are supported over the operational data thanks to the blended OLAP+OLTP support that enables analytical queries over the operational data.

## Business Benefits

LeanXcale's characteristics allow to intake significant amounts of CDRs in a short period, additionally, it can calculate KPI's based on complex queries in an agile manner.

These two combined capacities reduce the Time-To-Value, leveraging new scenarios that were not possible before due to the fact the needed time to calculate them: More complicated scenarios, more information takes in consideration, more customized calculation related, for instance, to a single customer.

A telco company takes advantage of a CDR analysis platform with the mentioned features obtaining:

- Lower CAC: Since it can design better plans to capture new customers: Identifying offers to fit the target segments, their influencers and creating customized offers.
- Lower Churn: Customer has better-designed plans. Additionally, their pattern usage variation can be identified by the telco proactively and receive new ad-hoc offers.
- Higher LTV: Since the churn figures are smaller and the plans perfectly fit the current customer base.

## About LeanXcale

LeanXcale was founded by a group of top researchers in the field of databases. To this group has been enriched with a group of engineers with experience from several industries and a selected cabinet of advisors: Glen Osaka (PayPal advisor at the time of Elon Musk) or the distributed database guru Patrick Valduriez stand out among them.

## Resources

Visit [www.leanxcale.com](http://www.leanxcale.com) for more information, or contact us at [info@leanxcale.com](mailto:info@leanxcale.com).

Free Trial (<https://www.leanxcale.com/trial>)

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