SingleStore™

Case Study

# Top 10 CSP

TELECOM


MADE ON SINGLESTORE

## Top 10 Communications Service Provider Accelerates its Journey to 5G by Replacing Oracle Exadata with SingleStore

### About

A leading telecommunications company providing wireless communications, broadband, and fiber-optic services. Serving millions of customers, it offers mobile and internet solutions, 5G network connectivity, and digital media services.

### Industry

Telecom

### Use case

MODERNIZE TCO REAL-TIME ANALYTICS

### Solutions

SingleStore Helios®

### Overview

One of the world's top 10 communications service providers (CSPs) delivers digital services to its more than 140 million customers via its reliable network and the latest technology. For every CSP, the network is the biggest asset and differentiator: the quality, health, and well-being of the network directly impact service quality, customer churn, revenue growth, and employee compensation. So the company's ability to instantly monitor and resolve any issues in the network is paramount.

### Challenges and Goals

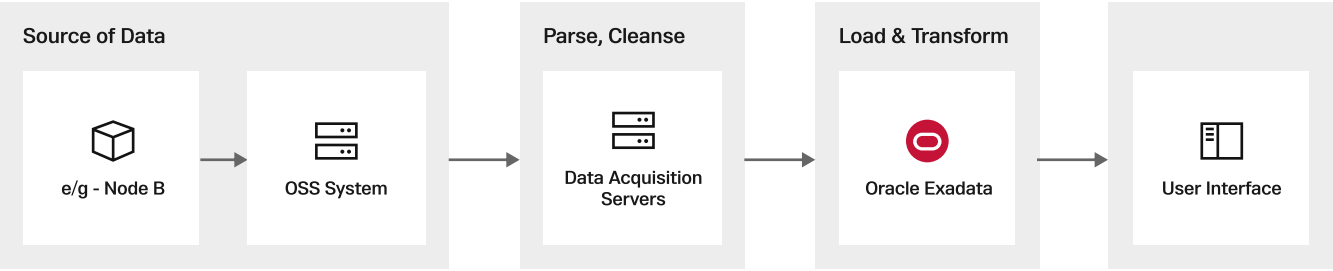
Ensuring network health and uptime is a challenge that has grown exponentially with the company's 5G rollout, which has increased data volumes by up to 20X. Since this CSP was already struggling to deal with data volumes associated with 4G service, the question was, what was its game plan for 5G?

*Technical Issues*

The customer's previous data management solution for ingesting and processing 4G and all data-related services was based on Oracle Real

Application Clusters (RAC) on Exadata. The legacy architecture, shown in the image that follows, was never designed to address the incredible growth and complexity of today's data-driven world, and this posed enormous challenges:

- The explosion of smart and connected devices has already outpaced its existing data capabilities, and 5G is expected to increase data volumes by 20X. Oracle RAC on Exadata does not scale well, was extremely costly, and could not keep up.
- The customer needed immediate event-to-insights to respond to changing conditions and requirements, and Oracle's analytical reporting performance was extremely slow, with data refresh every 1-17 minutes.
- Oracle's limitations imposed a high degree of complexity and maintenance overhead. DDL on partitions is a serial operation and the majority of the time in this area was spent on partition maintenance.
- The legacy architecture provided limited integration capabilities with modern data sources such as Kafka and S3, which are essential to enabling a simpler, more scalable and flexible architecture, or with new AI and machine learning capabilities to support predictive analytics.
- The CSP was unable to take advantage of the flexibility of the Cloud.




*Business Impacts*

These complexities and architectural challenges were preventing the CSP from gaining visibility into the health of the network, which touched off downstream effects including poor customer experience, churn, and an inability to upsell existing accounts.

Oracle's only proposed solution to improve performance was to throw additional, expensive Exadata systems at the problem, and while the cloud could provide some cost relief if implemented effectively, Exadata on Oracle Cloud was the only option.

In short, this CSP's impending 5G rollout looked less like a service and business opportunity and more like a looming disaster. The team knew it needed to make a move or risk massive customer churn, and that continuing to rely on Oracle would mean that while revenues were collapsing, costs would be skyrocketing.

## Technology Requirements

This company's requirements in a new system included:

- A modern and future-proof platform
- Scalability and high performance
- Cloud-ready
- AI- and machine learning-ready
- Faster event-to-insight

## Why SingleStore

SingleStore is built from the ground up to be the enterprise data platform that can handle modern data workloads. It offers the flexibility to deploy on-premise with SingleStore Self-Managed, in the cloud with SingleStore Helios, or, as a number of SingleStore customers are doing, running both in a Hybrid strategy. SingleStore offers a future-ready platform with seamless migration from Oracle:

- Highly performant, scalable distributed architecture
- Next generation- and 5G-ready
- Cloud- and AI/ML-ready
- Predictive event-to-insight in real time
- Lower TCO and better price/performance
- Architected to support crucial Loading and Reporting functions
- Simplified management

## Solution

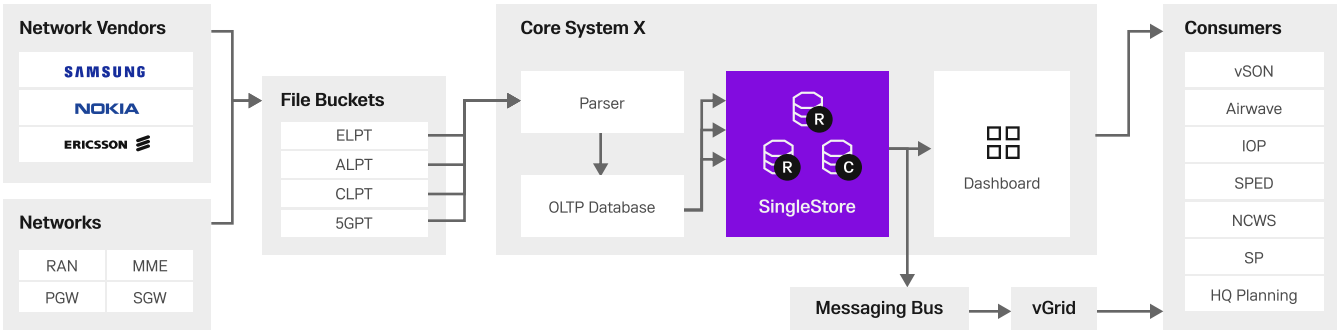
With SingleStore, the customer is tackling 5G with a true technology and business partner offering:

- A low-risk, high-confidence migration strategy from legacy architecture to modern platform
- Higher performance and easy scalability using more cost-effective commodity hardware instead of expensive proprietary hardware
- Integration with modern data sources such as Kafka and S3 to deliver predictive analytics natively

The current SingleStore deployment at this CSP encompasses multiple applications totaling more than 500 nodes and mainly supporting what we will call, for purposes of this document, the Core Network System.

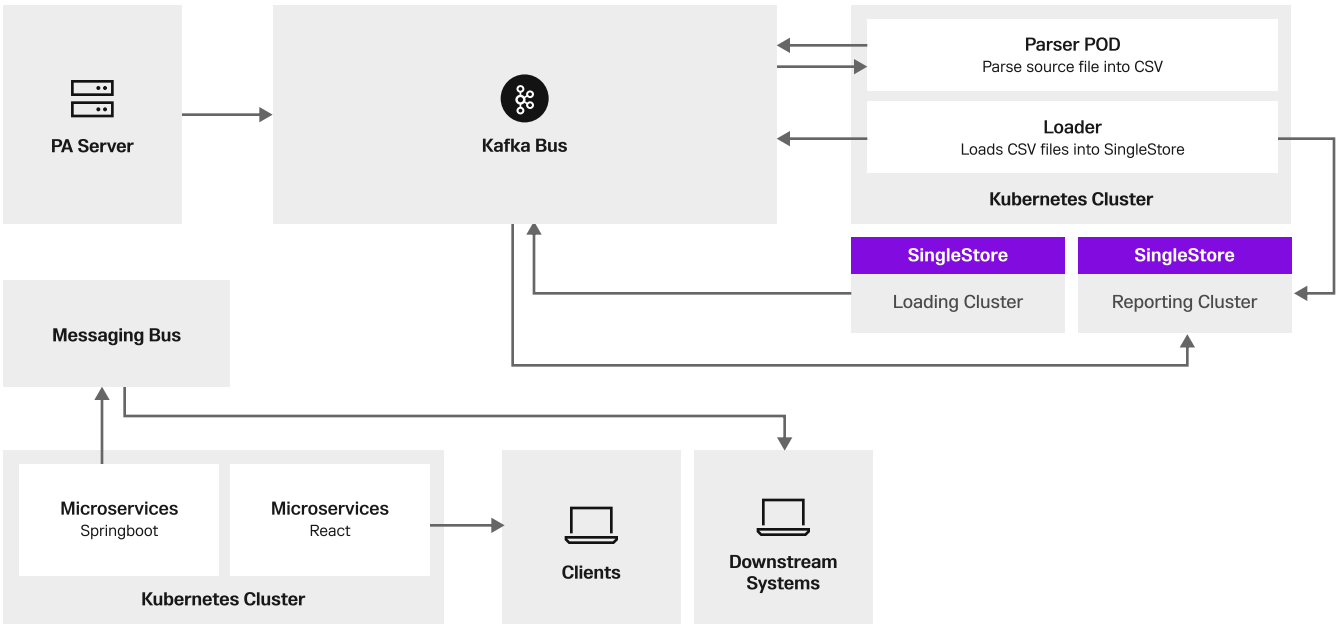
Data from the Core Network System primarily enables field technicians to look up the current and past states of network health and RAN equipment data. Data scientists use this data to build statistical models to detect degradation in Quality of Service (QoS) and equipment failures, and network planners can assess network capacity utilization and plan capacity expansion accordingly.

Core Network System's existing landscape, shown in the image that follows, routed data from networks and the various equipment-specific element management systems through a Parser. A Loader flowed data into multiple regional databases that was used to power the analytical applications and fast dashboards. Moreover, the same data is communicated via a Messaging Bus and an Apache Hadoop vGRID to various data consumers.



By working with SingleStore, this CSP has been able to modernize the architecture of one of the Core Systems, as shown in the image that follows, by encapsulating the existing Parser and Loader in a Kubernetes Cluster. The Kubernetes Cluster communicates with a new SingleStore Loading Cluster, and both communicate bidirectionally with a Kafka Bus that feeds a new SingleStore Reporting Cluster.

A second Kubernetes Cluster built on Springboot- and React-based microservices now communicates with the Messaging Bus, clients, and downstream systems. These have led to much faster ingestion in real time and more than a 10-100X improvement in latency, coupled with millions in savings compared to the legacy architecture.




Now implemented on SingleStore, the Core Network System provides operational analytics about this CSP's network in real time and near real time. These analytics also measure internal network efficiencies and impact employee compensation based on a myriad of KPIs.

This customer is also using SingleStore to support what we will call Core System Y, a trouble ticketing system for cell sites. If Core System X shows QoS degradation or equipment failure, this creates a trouble ticket in Core System Y and feeds it into a network maintenance workflow for resolution.

From a support standpoint, SingleStore required no staff augmentation at the customer, and since SingleStore is far less complex and more user-friendly to manage than Oracle, it was relatively simple to retrain existing Oracle DBAs to support SingleStore.

## Outcomes

By innovating with SingleStore, this CSP is able to solve major issues that are common across the communications and streaming media industry today while positioning itself for the future.

### *Big Performance Gains and Cost Savings*

The customer is now experiencing 6-100X faster query performance and reaping $5.4 million in annual savings by moving to SingleStore.

*Modern, Data-Ready, and Future-Proof*

Not that long ago this CSP looked to the future with trepidation because its legacy data architecture could not even effectively handle 4G, much less the massive data growth required to deliver 5G. Now it has achieved its journey to 5G with a scalable, high-performance data platform that is cloud- (and on prem-, and hybrid-) ready, AI- and machine learning-ready, and enables the real-time and near real-time event-to-insight capability it needs to compete in today's millisecond economy.

Its modern data fabric will also support its upcoming initiative to build a "Next Best Recommendation" app that equips retail store associates with real-time recommendations about cross-sell and upsell opportunities based on customer data.

*Attaining Tens of Thousands of KPIs and Ready for More*

Compensation in this customer's organization is heavily tied to meeting KPIs, and since deploying SingleStore, the network division within the customer has attained a remarkable 18,000 KPIs companywide. This is especially important because it can now confidently face the 15-20% organic YoY growth it is experiencing on its network, driven in part by an explosion of 5G usage that will triple KPIs to 90,000 and another 20,000 KPIs being driven by growth in the next phase of 5G usage.