ORACLE
DATABASE IN-MEMORY
CASE STUDY

Insurance Leader Die Mobiliar Accelerates Operational Data Analytics with Oracle Database In-Memory

> *"Die Mobiliar was keen to find a solution that would allow them to satisfy their analytic query needs without having to create a second copy of the data or manually tune the queries. Ultimately, our goal was to* ***complete analysis without ETL*** *and perform our risk assessment analysis directly on OLTP data."*
>
> – Paolo Kreth, Head of Database Administration Team

Operational Data Analytics

Insurance firms succeed through their ability to identify and quantify risks facing their clients. They are under constant and increasing pressure to rapidly consider every available quantifiable factor to develop profiles of insurance risk.

To this end, insurers collect a vast amount of operational data about policy holders and insured objects. While extremely valuable, this operational data must often wait to be coaxed into a traditional data warehouse format, for even later assessment by an analyst.

But to be truly effective, insurers need their risk assessment to happen in real-time, as the operational data is being collected; not hours or days later. Real-time risk analysis needs to be performed against up-to-date operational data.

This case study discusses how Mobiliar restructured their multi-database data warehouse environment to streamline risk analysis using operational data. This enabled Mobiliar to perform business critical risk assessment in real-time, with the added benefit of being able to position the appropriate product for up/cross selling opportunities.

die Mobiliar

Oracle Customer: **Die Mobiliar**
Location: Bern, Switzerland
Industry: Insurance
Employees: 4,500+
Clients: 1.7M

About Die Mobiliar

Mobiliar, founded in Bern in 1826, is the oldest private insurance company in Switzerland. It is still organized as a cooperative. Every third household in Switzerland is insured with Mobiliar.

The company's network of 160 offices, and more than 4,500 employees, provides home, car, accident, risk management insurance and other financial services to about 1.7 million individuals and businesses throughout Switzerland's 26 cantons (member states).

Challenge: Streamline Analytics without Requiring ETL

The ultimate goal for organizations, like Mobiliar, that want to streamline their analytics is being able to analyze their data in real time—without having a negative impact on OLTP [online transaction processing] performance and without having to wait for the classic ETL [extract, transform, and load] process to load transaction data into the data warehouse.

Mobiliar currently runs their insurance application (policy data) on an IBM DB2 database running on a mainframe. The system has approximately 5.4 million policies with about 550,000 policies or 1/10 of the data set being actively processed.

Details of the active polices don't exist in their data warehouse, so some business-driving analytics is run directly on the operational system, such as RISK analysis. However, they found that DB2 on the mainframe really wasn't designed for analytics and a simple query to find out what is the most popular brand of car driven by Mobiliar customers, with multiple insurance policies, took almost 3 hours.

In order to improve the performance of these analytic, business-driving queries, Mobiliar deployed an IBM DB2 Analytics Accelerator with Netezza technology in conjunction with the mainframe. The Netezza system held a full copy of the OLTP data and any complex analytic queries submitted to operational systems were automatically forwarded to the Netezza system -- approximately 20 to 30% of the workload submitted to the mainframe was offloaded to the Netezza system.

While these solutions worked adequately, Mobiliar was keen to find a solution that would allow them to satisfy their real-time analytic query needs without having to create/maintain multiple copies of the data, spend time transforming the data or manually tune their queries.

To meet this goal, Mobiliar decided to migrate the IBM DB2 environment to Oracle Database 12*c* with Oracle Database In-Memory, a combination that they believed would easily support both their OLTP and their analytic requirements, within a single database, therefore requiring only one copy of the data. No ETL processing required.

Astonishing Proof of Concept (PoC) Results

Mobiliar found itself with a classic data warehouse infrastructure not uncommon to organizations with long histories and technology acquired via mergers and acquisitions. Management at Mobiliar realized that change was needed in order to meet their real-time analytics goal using operational data – but this meant that ETL and data transformation/movement wasn't ideal and did not fit the company's long-term analytics plans.

Oracle Database In-Memory has a unique dual format (rows and columns) that maintains the transactional data in both row and columnar format in memory, enabling real-time analytics to be performed immediately across all transactions, thereby eliminating delays and reliance on transforming transactions into a data mart, data warehouse or other analytic store for examination.

To prove that Oracle Database In-Memory could truly allow Mobiliar to use their operational data for real-time analytics, the database team at Mobiliar set up a proof of concept to test different analytical scenarios. Key to the proof of concept for Mobiliar was choosing scenarios that represented typical business cases for the insurance company

Oracle Database 12*c*, with the Database In-Memory option, was installed on a seven-blade, Intel Xeon–based server with 384 GB of main memory per blade and the Linux operating system. The database was populated with the same data that

KEY TAKEAWAYS: DIE MOBILIAR USE OF ORACLE DATABASE IN-MEMORY

- In some cases data loads became faster because Database In-Memory helped to identify delta data sets to be processed
- Observed uploads to be much faster -- avoided explicit creation of materialized views and other aggregates
- Query performance improved from 7 minutes to 100 milliseconds for simple group functions on a very complex join
- Eliminated need for new analytic indexes (space reduction) or materialized views (simplifies application design)
- Enables real-time insight, visibility and agility for the business
- Improves the customer experience

ORACLE DATABASE ENVIRONMENT

- RHAT LNX versions 6 and 7 Enterprise
- LENOVO servers – 4 sockets; 8 cores per socket ; 3 TB RAM per system – storage flash system Lenovo X3850 X6
- Single instance. Oracle Database versions 12.1 and 12.2 on Multitenant (already 200 PDBs)
- Memory dedicated to In-Memory: Between 50 GB and 400 GB (depends on application and system)

"On average the Oracle Database In-Memory option improved application performance between 50 and 200 times"

- Paolo Kreth, Head of Database Administration Team

ran on the firm's sales data warehouse - essentially testing the system "as is".

The first PoC test scenario was fairly typical of many organizations. After completing a new sell, the customer's data would be entered into an OLTP database system. Previously that information wouldn't be visible in their sales data warehouse until some later time. While that is a very typical OLTP/data warehouse configuration, Mobiliar realized the lag time between the data moving from operational to analytical was limiting their ability to realize additional revenue from the customer. Their ability to up/cross sell was limited to after the customer signed the contract, rather than at the time of initial sell.

Their testing with Oracle Database In-Memory changed the way they viewed their operational data. Their purely analytical queries running against their operational data (no ETL/data transformation required) were shown to perform between 50 and 200 times faster than previous queries using the dedicated data warehouse. The impact on their business was easy to see. Instead of missing opportunities to up/cross sell additional products before contracts were signed (and the data moved to their sales data warehouse), Mobiliar was now able to utilize their operational data directly, as that data is generated, to provide their customer with additional coverage options and discounts, providing Mobiliar with new revenue opportunities.

Additionally, the Mobiliar database team wanted to determine if Database In-Memory could also benefit the company's 20-year-old risk management system, dubbed RICO. The team made only a few changes to the partitioning schema of the application, which has its own 1 TB database. Again, the results were astonishing. They discovered that simple group functions on a very complex join went down from 7 minutes to 100 milliseconds – allowing faster and more extensive risk management analytics, with negligible impact on operational data processing.

Die Mobiliar and Oracle Database In-Memory

For Mobiliar the future direction of their real-time analytics is clear. Their Database In-Memory proof-of-concept demonstrated a 50-200X performance improvement on the SLA for their 13 most critical real-time analytic use-cases without having to change a single line of code in their home-grown risk analysis tool.

With Oracle Database In-Memory, Mobiliar's response times improved from minutes to milliseconds using operational data and with zero, or negligible, impact on operational data processing. In fact, Mobiliar was able to avoid creating new analytical indexes (a potential savings of 1TB of storage) as well as apply more efficient application design by eliminating the need for materialized views. This level of performance is necessary for critical analysis to be meaningful to Mobiliar and allows them to implement other up/cross sell and risk analysis use cases to meet their changing business requirements.

Based on these results, it was proven that Oracle Database 12*c*, with the Database In-Memory option, provides a solution for both their OLTP operational requirements and their real-time analytic requirements, within a single Oracle database. No ETL processing or multiple copies of data required.

About Oracle Database In-Memory

Oracle Database In-Memory transparently accelerates analytic queries by orders of magnitude, enabling real-time business decisions. It dramatically accelerates data warehouses and mixed workload OLTP environments. The unique "dual-format" approach automatically maintains data in both the existing Oracle row format for OLTP operations, and in a new purely in-memory column format optimized for analytical processing. Both formats are simultaneously active and transactionally consistent. Embedding the column store into Oracle Database ensures it is fully compatible with ALL existing features, and requires absolutely no changes in the application layer.

BEST PRACTICE:

For more information including Overview, Downloads, Documentation, Community and Learn More, please visit Oracle Database In-Memory on OTN:

http://www.oracle.com/technetwork/database/in-memory/overview/index.html

CONTACT US

For more information about Oracle Database In-Memory, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

CONNECT WITH US

blogs.oracle.com/oracle

facebook.com/oracle

twitter.com/oracle

oracle.com

Hardware and Software, Engineered to Work Together

Copyright © 2017, Oracle and/or its affiliates. All rights reserved. This document is provided for information purposes only, and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document, and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.