# SQL Access Advisor Improves Performance at Britannia

## Background

The Britannia Building Society (http://www.britannia.co.uk) has been around since 1856, and has grown to become the second largest mutual building society in the UK. The Society lends almost £6 billion annually, and has under its management, group assets of over £22 billion.

Ensuring that their IT systems are operating at maximum performance has always been a challenge for the DBA's. In the past, they have always used traditional tuning techniques optimizing the SQL, ensuring the database design is efficient and spending time manually tuning the systems.

## Optimizing Performance

The Britannia Building Society relies on materialized views and indexes in several of their systems to guarantee fast query response times. Before their introduction, queries could run anywhere from 30 minutes to 2 hours. Once the materialized views were created, Britannia found that the queries, which used to take 2 hrs, were now taking 10 minutes, and those queries which used to take 30 minutes, now return results in 2 minutes, and the queries which used to take 1 or 2 minutes, return results instantly.

Britannia made extensive use of EXPLAIN PLAN in order to experiment with the various indexing options. As a result of this tuning exercise, a mixture of B*tree and Bitmap indexes were created.

## Tuning using the SQL Access Advisor

Oracle Database 10*g* saw the introduction of the SQL Access Advisor, which analyzes SQL workloads and recommends indexes and materialized views to improve SQL performance.  At the appropriate time, you can have the SQL Access Advisor capture the current contents of the SQL cache for analyses, in order to identify appropriate access structures for performance enhancement.

The Britannia Building Society decided to run the SQL Access Advisor, to confirm that their systems were optimally tuned. Two different systems were selected for analysis viz.

- A 35Gb MIS database holding 40 months of data and having five fact tables holding between 16 and 32 million rows. The database also has a large number of Dimension tables.
- A 50Gb CRM database. This is a third party application, with a Britannia built front end. It holds over three million customer records.

The workload captured for the CRM system, was a mixture of batch updates and Transaction Processing. The MIS system workload was batch reports (run overnight) and ad hoc queries.

## The Recommendations

Using conventional methods, this tuning exercise would have taken days. However, using the SQL Access Advisor, within a matter of minutes the DBA had a set of recommendations to review and that what they discovered was very informative.

The recommendations confirmed that all the materialized views and indexes that they had created were being used, which Britannia found very useful because it was a confirmation that their tuning exercises had been very successful. However, the recommendations included some other suggestions.

*Index Recommendations*
For the MIS system, it recommended 5 new indexes and provided the expected performance benefit of each index. After a review, the top 2 indexes in terms of performance benefit were implemented, which resulted in a further performance improvement to the system. Reports that use to take several hours were now returning results in approximately 15 minutes.

The recommendations for the CRM system was for the creation of three bitmapped indexes on a database from a 3rd party supplier. Discussions are now taking place with the supplier to see if these indexes can be included in their design.

*Materialized View Recommendations*
The SQL Access Advisor also suggested a new materialized view for the MIS system. An investigation revealed that this materialized view should have been created, but was missed during implementation. With the complex systems that are required today, it's very easy for improvements in the database to be missed, and without the SQL Access Advisor, Britannia may not have realised for some time, that this missing materialized view could have been degrading performance.

The CRM system was well tuned and the SQL Access Advisor indicated that a new materialized view would only provide marginal performance improvement while taking up significant space. This materialized view was not implemented, as the performance/space trade-off was not considered favourable.

## Implementing the Recommendations

*"Using the SQL Access Advisor, we discovered that we were able to further tune our already optimized systems with ease and in a very short period of time." —*
*David Martland,*
*Data Architect*
*Designer,*
*Britannia Building*
*Society*

The SQL Access Advisor makes recommendations and provides the expected performance benefit of each recommendation. This allows the Britannia DBAs to easily decide which, if any of the recommendations, to implement and gives them compete control over the process. Once a decision has been made, the required recommendations can be implemented, within Oracle Enterprise Manager with a click of a button, or a script can be provided and the DBA can implement them at a convenient time.

## Conclusion

The DBA's liked using the SQL Access Advisor, because whilst they could accept the recommendations, they preferred to scrutinise each one and decide which ones would be beneficial for their systems. Therefore, using the SQL Access Advisor, the Britannia Building Society discovered that they were able to further tune, their already optimized systems, with ease and in a very short period of time.