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Efficient Data Access and Performance Improvement Model for Virtual

Data Warehouse

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Highlights

1. query performance in Virtual Data Warehouse
2. partitioned materialized views, index performance optimization, etc are used
3. The study uses Oracle 10g as a backend database; Oracle management console and SQL query

Abstract— This paper presents a model for improving query performance in Virtual Data Warehouse (VDW) by simulating VDW environment on a cellular phone billing and customer care system which involves processing millions of Call Detail Records (CDRs) generated by thousands of counters across the country. Processing aggregations on millions of CDRs requires expensive systems, especially when analysing customers' traffic trends and encompasses several performance optimization techniques used for improvement of query performance in VDW. In this regard, VDW offers several advantages such as real-time analytic reports, reduced maintenance, low cost solution and flexible data integration, but performance is still one of its critical shortcomings. This paper enhances performance of VDW by using techniques like partitioned materialized views, index performance optimization, query rewrite in materialized views, analytic functions, sub-queries and enabling parallel execution etc. The study uses Oracle 10g as a backend database; Oracle management console and SQL query analyser are used for monitoring performance concerns during validation of VDW model; standard PL/SQL developer is used for extracting and loading test data; and finally, Hyperion Development suite is used for testing time comparisons of datasets both in normal OLTP and simulated VDW environments.

Keywords—*Business Intelligence; OLTP; Performance Optimization; Query Optimization; Virtual Data Warehouse.*

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