

OPTIMIZING POWER BI REPORTS FOR LARGE-SCALE DATA: TECHNIQUES AND BEST PRACTICES

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ABSTRACT

The increasing volume of data generated by organizations necessitates the effective use of analytics tools to derive actionable insights. Power BI, a leading business intelligence platform, offers a powerful suite for visualizing and interpreting large-scale datasets. However, users often encounter performance challenges when handling substantial amounts of data, which can impede decision-making processes. This paper explores techniques and best practices for optimizing Power BI reports tailored for large-scale data environments.

Key strategies include data modeling enhancements, such as utilizing star schema designs, which improve query performance and reduce report load times. Additionally, leveraging incremental data refresh and aggregations enables users to optimize data retrieval processes efficiently. The use of DirectQuery versus Import modes is also examined, highlighting scenarios where each method is most beneficial for maintaining responsiveness in reports. Furthermore, the implementation of effective DAX (Data Analysis Expressions) measures and calculated columns can significantly influence performance, ensuring that reports remain agile even under heavy data loads.

This study underscores the importance of best practices, including optimizing visualizations to avoid excessive complexity and minimizing the number of visuals per report page. By adopting these techniques, organizations can enhance the performance of their Power BI reports, leading to more timely and informed decision-making. The findings presented herein aim to serve as a comprehensive guide for data analysts and business intelligence professionals seeking to maximize the effectiveness of Power BI in the context of large-scale data analytics.

KEYWORDS: *Power BI, Large-Scale Data, Report Optimization, Data Modeling, Performance Enhancement, Star Schema, Incremental Data Refresh, Direct Query, DAX, Calculated Columns, Visualizations, Best Practices, Business Intelligence, Data Analytics.*

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