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Power BI Performance Optimization

TRANSFORM YOUR DATA INTO DECISIONS!

Introduction

Power BI is a powerful data visualization and business intelligence tool. However, as reports grow in complexity and data volume, performance issues can arise - leading to slow loading visuals, delayed refreshes, and a poor user experience. This guide focuses on essential techniques and best practices to optimize Power BI performance.

Efficient Data Modeling

- Use **Star Schema** over Snowflake.

- Avoid unnecessary columns and tables.

- Minimize calculated columns in the model - use Power Query instead.

- Use proper data types (e.g., whole number instead of decimal if not needed).

- Avoid bidirectional relationships unless necessary.

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Optimizing DAX Calculations

- Use measures instead of calculated columns.

- Avoid **FILTER** or **CALCULATE** when simple aggregations will do.

- Leverage variables (**VAR**) to reduce repeated calculations.

- Avoid using **IF** repeatedly - try **SWITCH**.

- Minimize row context operations in large datasets.

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Power Query Optimization

- Apply **data transformations as early as possible** in the steps.

- Filter rows before merging or joining tables.

- Remove unnecessary columns immediately after loading.

- Disable loading intermediate queries unless they are needed.

- Try to **retain query folding** wherever possible.

Managing Data Refresh

- Use **Incremental Refresh** for large datasets.

- Avoid importing unnecessary historical data.

- Use source-level filtering in Power Query.

- Schedule refreshes during off-peak hours.

Visual-Level Optimization

- **Reduce the number of visuals** on a report page.

- Avoid using **high-cardinality slicers** or **filters**.

- Turn off unnecessary interactions between visuals.

- Use **aggregated data** when high granularity is not required.

- Limit the number of visuals using DirectQuery.

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Storage Mode Considerations

- Use **Import Mode** for better performance when possible.

- For large or real-time datasets, **Hybrid tables** and **Composite models** can be useful.

- Avoid heavy calculations in DirectQuery mode.

Bonus Tips

- Use Performance Analyzer to identify slow visuals.

- Reduce cardinality of columns (e.g., avoid using precise timestamps in visuals).

- Optimize at the data source whenever possible.

- Keep your ".*pbix*" file size small.

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