High Level Design Document

Introduction

This High Level Design (HLD) document outlines the architecture and core components for **Retail360 - Store Performance Visualizer**. The project aims to deliver a Tableau dashboard for comparing sales, foot traffic, and conversion rates across multiple retail stores, featuring heatmaps and trend lines for actionable business insights.

System Architecture Overview

Architecture Description:
The solution consists of three main layers: Data Source, Data Processing, and Visualization. Data is extracted from retail systems, processed and transformed, then visualized in Tableau dashboards.

Component	Role/Responsibility
Data Source	Stores raw sales, foot traffic, and conversion data
Data Processing	Cleans, aggregates, and transforms data for analysis
Tableau Dashboard	Visualizes data with heatmaps and trend lines

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Component Interactions

Sequence Step	Interaction Description
1	Data Source exports raw data (CSV, database, or API)
2	Data Processing ingests and transforms data for Tableau
3	Tableau connects to processed data and renders dashboards
4	Users interact with dashboards for insights and comparisons

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Data Flow Overview

Data Flow Step	Source	Destination	Data Type/Format
Data Extraction	Retail Systems	Data Processing	CSV, SQL, or API
Data Transformation	Data Processing	Tableau Data Store	Cleaned/aggregated data
Visualization	Tableau Data	Dashboard UI	Visual elements (charts)

Technology Stack

Layer/Function	Technology/Tool
Data Source	Retail DB, CSV, APIs
Data Processing	Tableau Prep, SQL
Visualization	Tableau Desktop/Server

Scalability & Reliability

- **Scalability:** Tableau supports connection to large datasets and can be scaled by optimizing data extracts and leveraging Tableau Server for multi-user access.
- **Reliability:** Data refresh schedules and validation steps ensure up-to-date and accurate dashboards.
- **Security:** Access controls in Tableau and secure data connections protect sensitive business data.

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