DATA WAREHOUSE PROJECT ADVENTUREWORKS COMPANY

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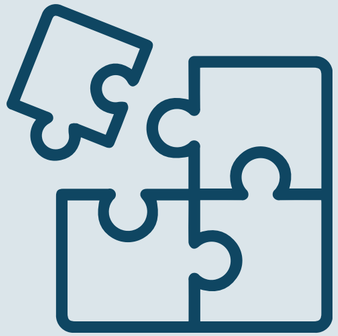
Project Overview

AdventureWorks2022 into AdventureWorks_DWH

The company faces challenges with scattered, unorganized data that slows analytical queries and leads to decisions based on partial or outdated data. To address this, it is implementing a dedicated Data Warehouse to consolidate, cleanse, and transform data from multiple sources into an integrated, analytics-ready system.

Project Objectives



Data Integration

- ETL from AdventureWorks2022 into Staging then to Data Warehouse
- Ensure data consistency and accuracy through cleansing and validation

Data Modeling

- Design a Galaxy Schema model for analytical queries
- Develop Dimension Tables (DimDate, DimCurrency, DimProduct, DimPromotion, DimCustomer, DimStore) and Fact Tables (FactStoreSales, and FactOnlineSales)

Technique Implementing

- Implement an incremental ETL process to update only new or changed records, improving performance.

Project Overview

Build a Data Warehouse (AdventureWorks_DWH) for AdventureWorks Company

Why do we have to transform and load data to Data Warehouse?

Feature	OLTP (AdventureWorks2022)	OLAP (AdventureWorks_DWH)
Purpose	Daily operations (insert, update, delete)	Strategic analysis & reporting
Data Model	Normalized (100+ tables, many joins)	Galaxy Schema (simple, fast queries)
Query Type	Short, fast, single record	Long, complex, aggregates
Performance	Fast for 1 row	Fast for many rows
Historical Data	Current only	Full history + trends

Project Architecture

AdventureWorks_DWH uses a three-layer architecture for efficient ETL and reporting: data moves from the source through staging (extraction & transformation) to the analytical data warehouse, enabling fast, reliable insights.

Source
(AdventureWorks2022)

- OLTP: Raw transactional data (Product, SpecialOffer, SalesTerritory, Store, etc.)

Staging
(SSIS)

- Extract, clean, transform, validate; handles incremental loads

Data Warehouse
(AdventureWorks_DWH)

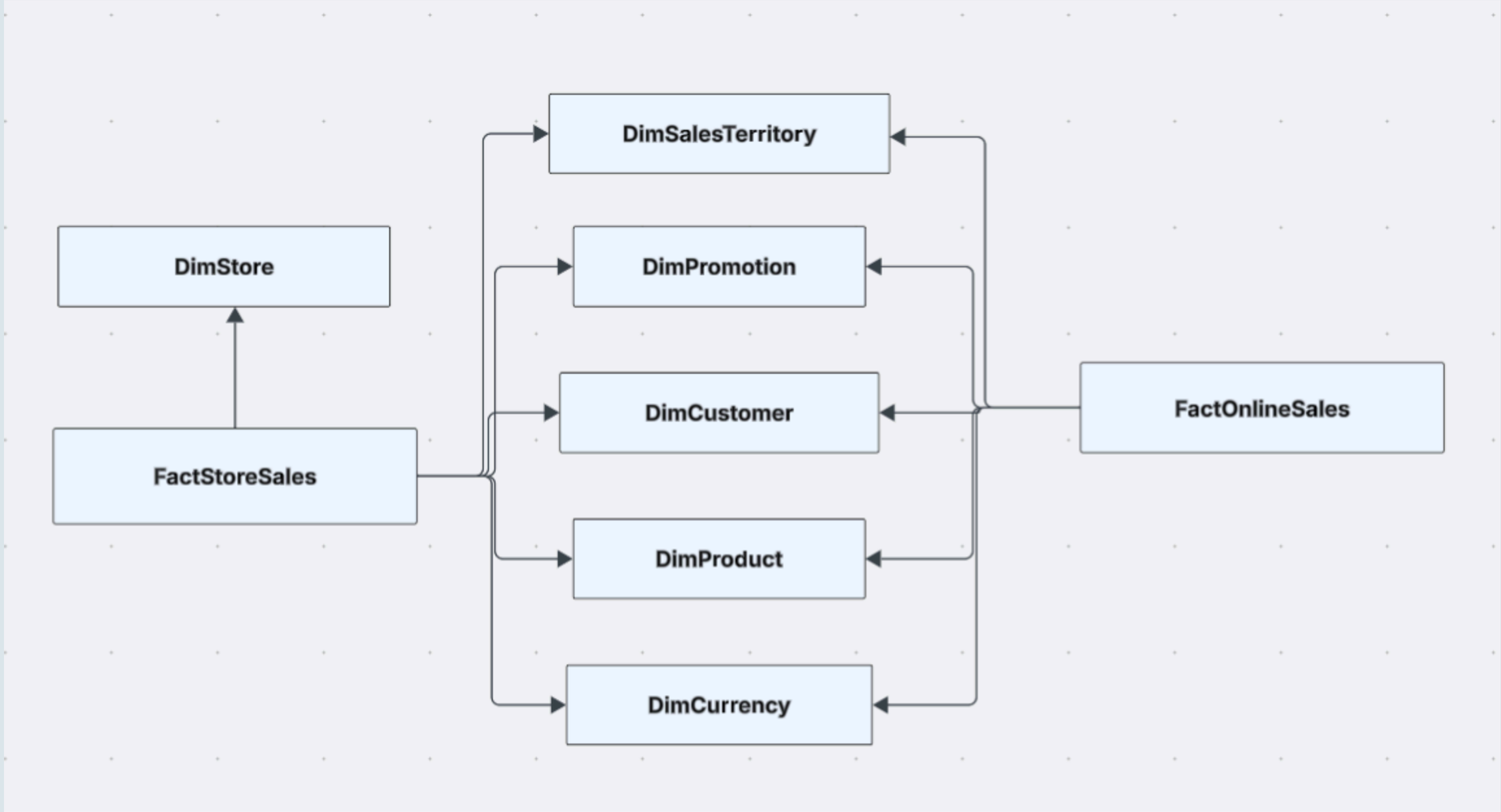
- OLAP: Galaxy schema
- Dimension Tables: DimCurrency, DimStore, DimProduct, etc.
- Fact Tables: FactStoreSales and FactOnlineSales

Data Flow Workflow

1. Extract: AdventureWorks2022
2. Staging: temporary storage for cleansing
3. Transform: Clean, validate, apply rules
4. Incremental Load: Load only new/updated data
5. Load: Into AdventureWork_DWH (Dim + Fact tables)

Data Modeling Design

For the AdventureWorks_DWH, the data model is designed using a Galaxy Schema approach



Project Task Breakdown(Environment)

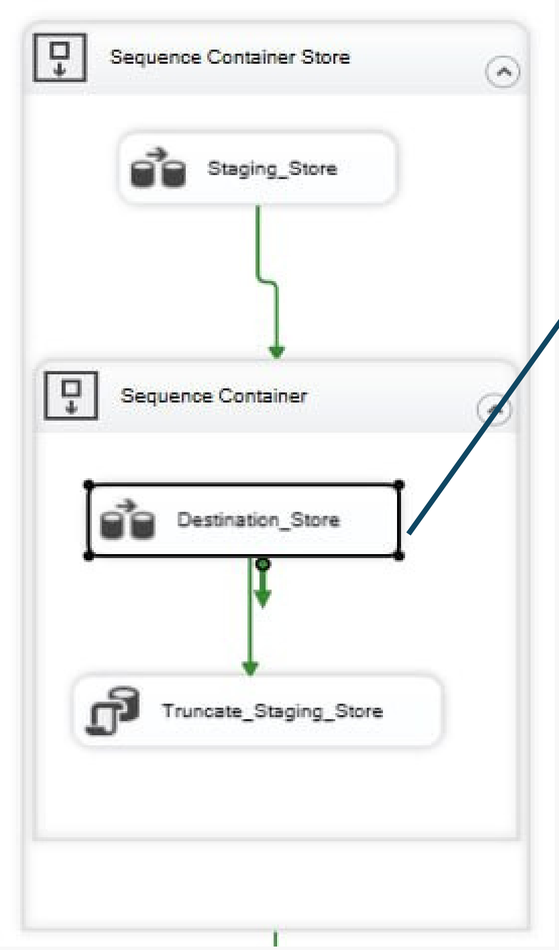
To set up the environment we need to have:

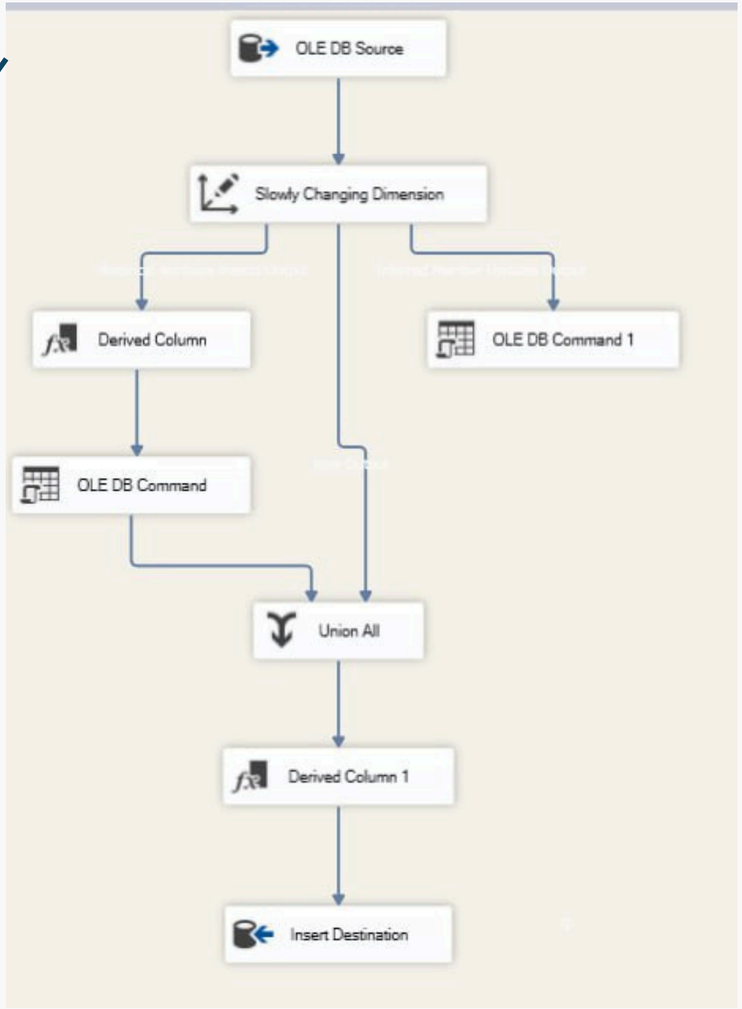
- Visual Studio
- Microsoft SQL Server

The Database needed:

- Source: AdventureWorks2022
- Staging: AdventureWorks_Staging
- Destination: AdventureWorks_DWH

Project Task Breakdown (ETL)





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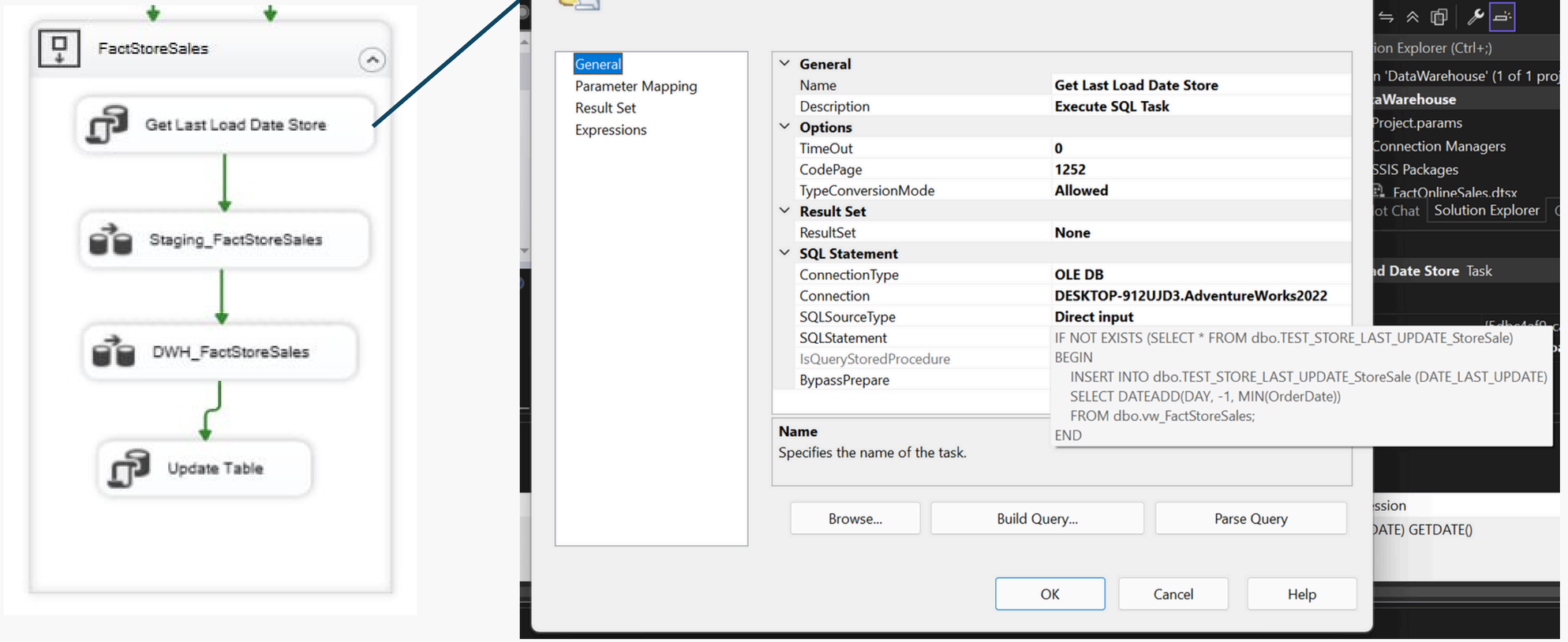

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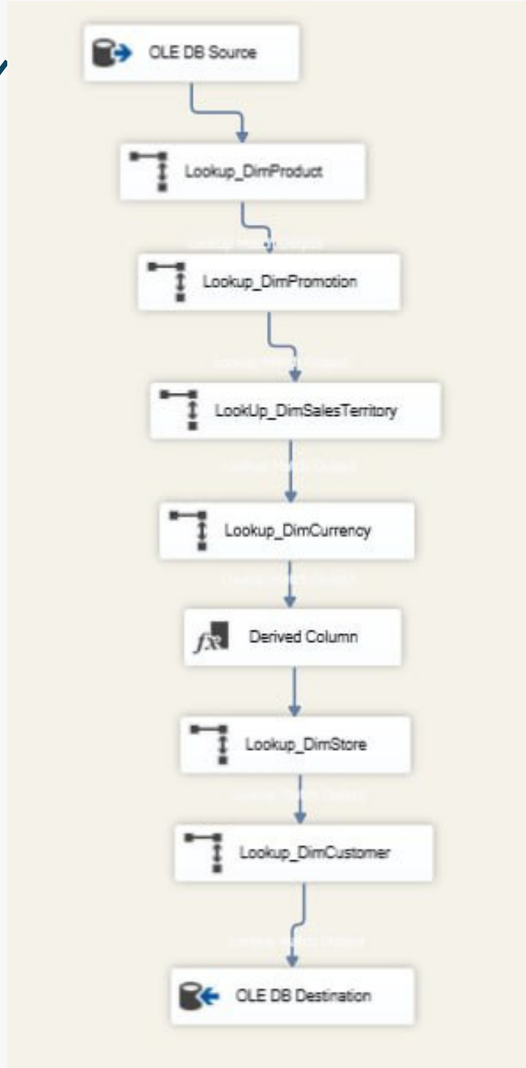

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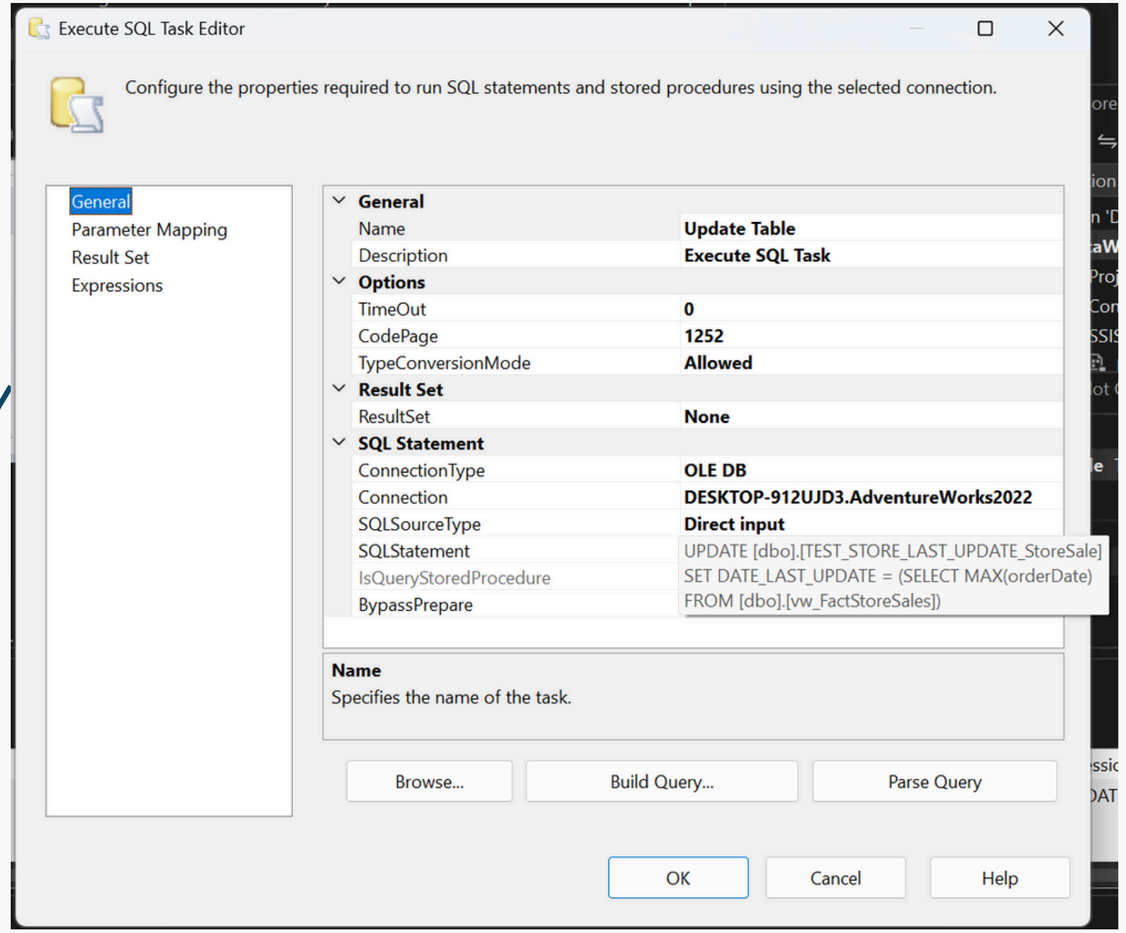
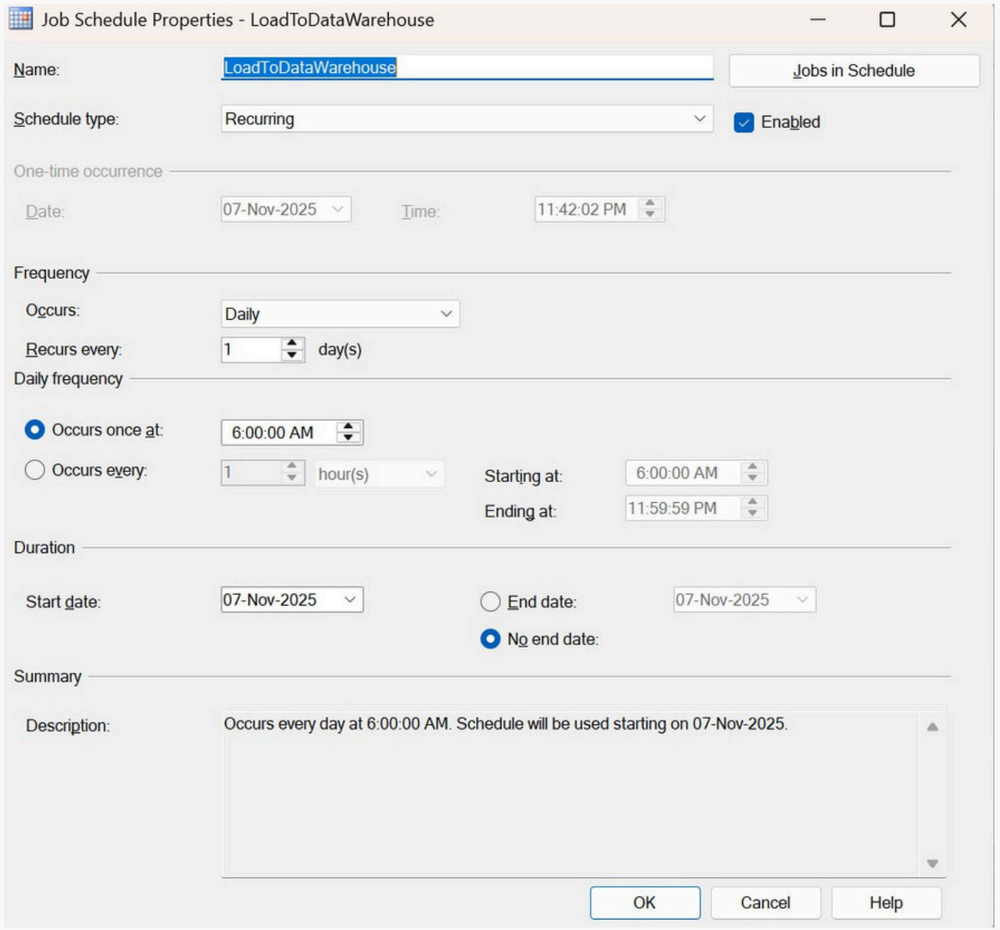


Project Task Breakdown (Deploy and Schedule)



Thank you