Low Level Design (LLD)

ANALYZING AMAZON SALES DATA

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R Shashikiran

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10-04-2022	1.0	Abstract, Introduction	Shashikiran
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Analyzing Amazon Sales Data

# Contents

Analyzing Amazon Sales Data

1. Introduction

1.1. What is Low-Level design document?

Low Level Design in short LLD is like detailing HLD means it refers to component-level design process. It describes detailed description of each and every module means it includes actual logic for every system component and it goes deep into each modules specification. It is also known as micro level/detailed design. It is created by designers and developers. It converts the High-Level Solution into Detailed solution. It is created second means after High Level Design

1.2. Scope

Purpose. The goal of LLD or a low-level design document (LLDD) is to give the internal logical design of the actual program code. Low-level design is created based on the high-level design. LLD describes the class diagrams with the methods and relations between classes and program specs.

2. Architecture
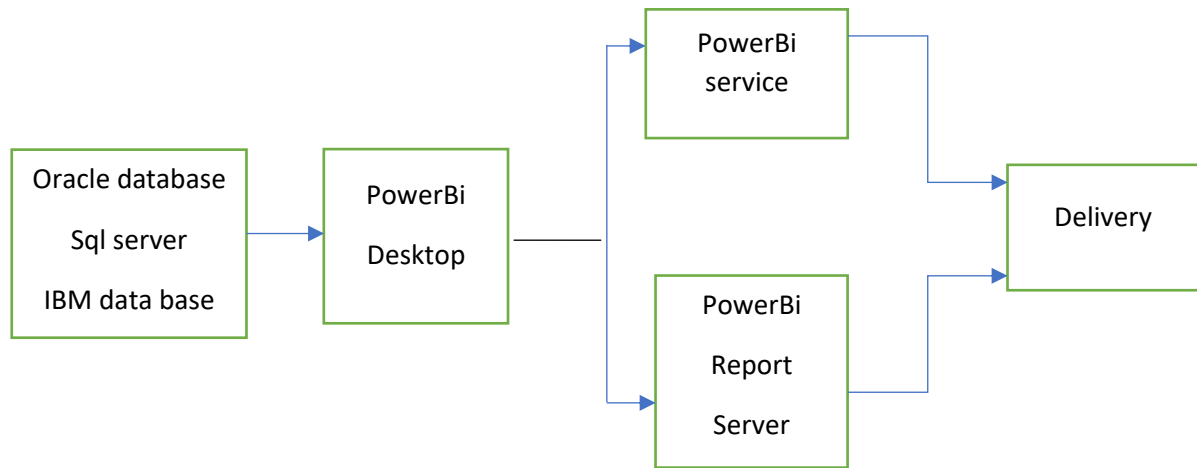
1. Data Sources

An important component of Power BI is its vast range of data sources. You can import data from files in your system, cloud-based online data sources or connect directly to live connections. If you import from data on-premise or online services there is a limit of 1 GB. Some commonly used data sources in Power BI are:

- Excel
- Text/CSV
- XML
- JSON
- Oracle Database
- IBM DB2 Database
- MySQL Database
- PostgreSQL Database
- Sybase Database
- Teradata Database
- SAP HANA Database
- SAP Business Warehouse server
- Amazon Redshift
- Impala
- Google BigQuery (Beta)
- Azure SQL Database
- Salesforce Reports
- Google Analytics

Analyzing Amazon Sales Data

2. Power BI Desktop

Power BI Desktop is a client-side tool known as a companion development and authoring tool.
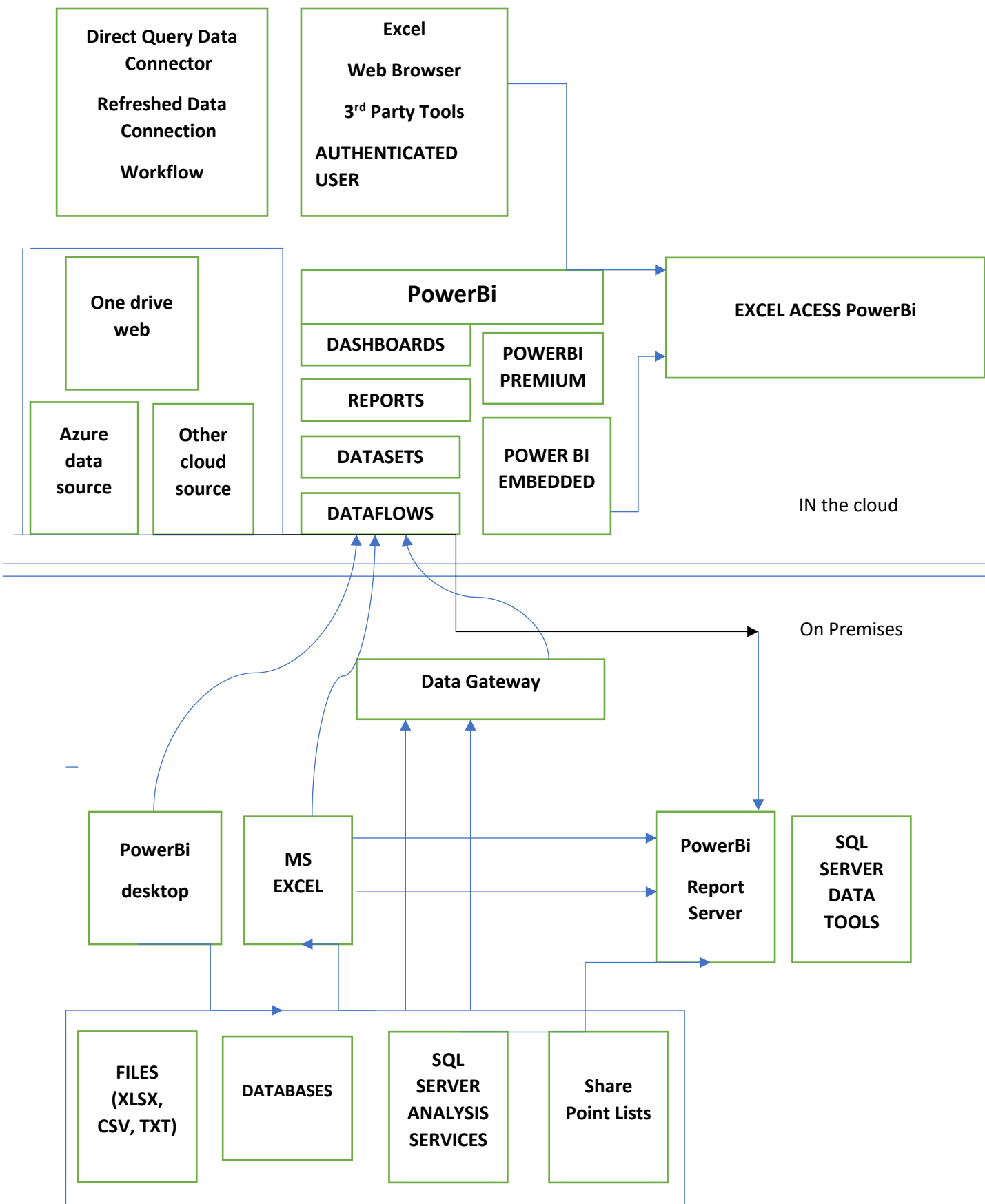
This desktop-based software is loaded with tools and functionalities to connect to data sources, transform data, data modelling and creating reports.

3 Power BI Gateway

This component is used to connect and access on-premise data in secured networks. Power BI Gateways are generally used in organizations where data is kept in security and watch. Gateways help to extract out such data through secure channels to Power BI platforms for analysis and reporting

4 Power BI Embedded

Power BI Embedded offers APIs which are used to embed visuals into custom applications.

Analyzing Amazon Sales Data

PowerBi Server Architecture

Direct Query Data Connector **Refreshed Data Connection** **Workflow**	**Excel** **Web Browser** **3rd Party Tools** **AUTHENTICATED USER**

One drive web

Azure data source

Other cloud source

PowerBi

DASHBOARDS

REPORTS

DATASETS

DATAFLOWS

POWERBI PREMIUM

POWER BI EMBEDDED

EXCEL ACESS PowerBi

IN the cloud

On Premises

Data Gateway

PowerBi desktop

MS EXCEL

PowerBi Report Server

SQL SERVER DATA TOOLS

FILES (XLSX, CSV, TXT)

DATABASES

SQL SERVER ANALYSIS SERVICES

Share Point Lists

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If you look closely, the above diagram has numbering done on each component in the architecture. Also, note that the lower half part is the on-premise part and the upper half part depicts the on-cloud services.

To begin with, what forms the starting point or source of all the data flowing into Power BI components are the data sources. Power BI has the get data feature using which you can connect to different kinds of data sources like files, on-premise or on-cloud databases, direct connections, etc. Data connections are established from these data sources to authoring tools such as Power BI Desktop.

On-Premise

Power BI Desktop is a companion development, authoring, and publishing tool. You can import data from data sources to Power BI Desktop and use it to create reports and then publish them on a Power BI Service or Power BI Report Server.

You can also publish Excel workbooks directly using Power BI Publisher for Excel to the Power BI Report Server. The SQL Server Data tools and Report Publisher help in creating datasets, KPIs, mobile reports, paginated reports, etc. The reports from all kinds of reports are published to the Power BI Report Server from where they are distributed to the end-users.

On-Cloud

An important component in Power BI architecture is the Power BI Gateway. The Power BI Gateway acts as a secure channel to transport data from on-premise data sources to on-cloud apps or sites.

On the cloud side of the architecture, resides a lot of components. Like a complete Power BI suite having dataflows, datasets, dashboards, reports, Power BI Embedded, Power BI Premium, etc. You can embed your reports and dashboards into Teams, SharePoint, custom applications, etc. There are on-cloud data sources as well that connects to Power BI tools via direct connections.

At last, there is a layer of authenticated users who share the published reports and dashboard and collaborate with one another to make educated decisions based on the insights. There are different kinds of users who consume Power BI reports and dashboards and connect through web browsers, Excel, third-party tools, and mobile devices (iOS, Windows, Android apps).

3. Architecture Description

3.1. Data Description

The dataset contains sales price, of amazon food data based on sales cost amount, discount price etc

Cust Key   :A customer key is a unique value across your enterprise that is typically stored in your database.

Date Key: Date's Key is a Quest Item received after talking to the afterimage of Date, in the same area where   the Date's Medal of Recognition was obtained

Discount Amount: Discount given on sales price

Invoice Date :The date of the document issue

Invoice Number: An invoice number is a unique, sequential code that is systematically assigned to invoices

Item Number: An item number is used to differentiate, categorize and uniquely identify retail items. It is assigned only once for a specific product

Item : Name of all the items

Line Number: A unique number of line where bulk of item/product are kept

List Price: The price of an article as shown in a list issued by the manufacturer

Order Number: An order number also called purchase number or ID order is a number that identifies a purchase or order placed by a buyer

Promised Delivery Date: Expected date of confinement, and estimated due date or simply due date

Sales Amount: Sales Amount means the total dollar amount of a Sale, and is comprised of the aggregate amount of all individual items to be sold in such Sale.

Sales Amount Based on List Price:The total list price that an item is listed to be sold for

Sales Cost Amount: The cost of sales is the accumulated total of all costs used to create a product or service

Sales Margin Amount: The sales margin, also known as the contribution margin, is the amount a company makes from a sale of a service or product

Sales Price: A sale price is the discounted price at which goods or services are being sold

Sales Quantity: The total number products sold

Analyzing Amazon Sales Data

3.2. Web Scrapping

Web scraping refers to the extraction of data from a website. This information is collected and then exported into a format that is more useful for the user. Be it a spreadsheet or an API.

Although web scraping can be done manually, in most cases, automated tools are preferred when scraping web data as they can be less costly and work at a faster rate. But in most cases, web scraping is not a simple task. Websites come in many shapes and forms, as a result, web scrapers vary in functionality and features.

3.3. Data Transformation

Data transformation is the process of converting data from one format or structure into another format or structure. It is a fundamental aspect of most data integration and data management tasks such as data wrangling, data warehousing, data integration and application integration.
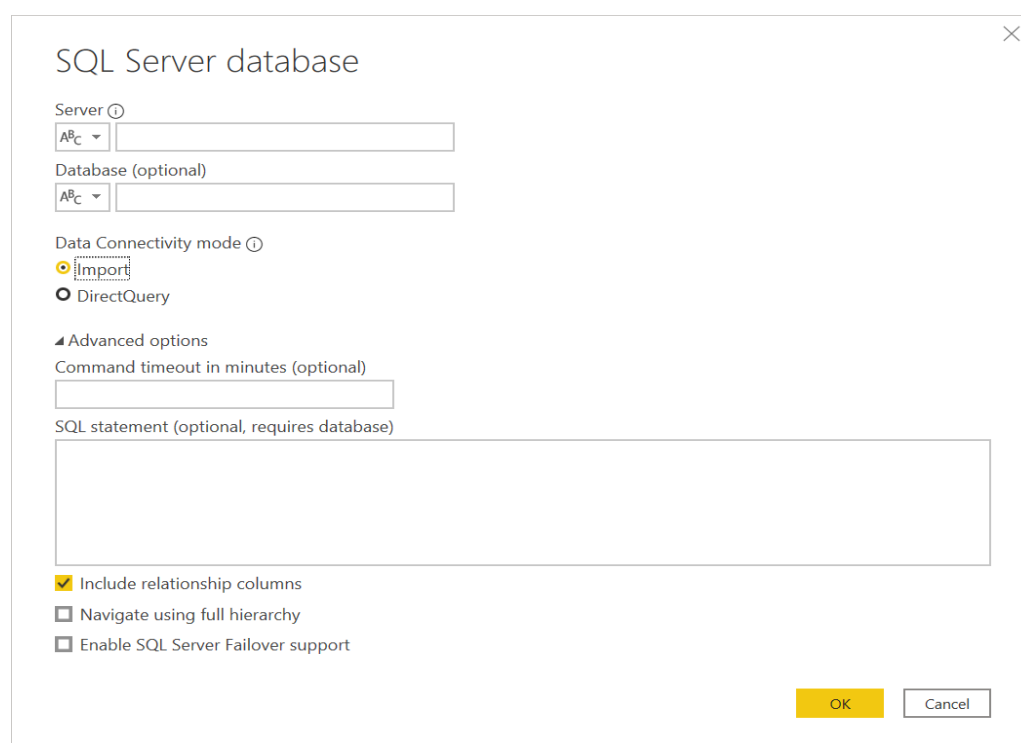
3.4. SQL connection and setting up the data source

Configuring PowerBi

**Step 1:** Either click on 'Get Data' or select 'SQL Server' in home ribbon.
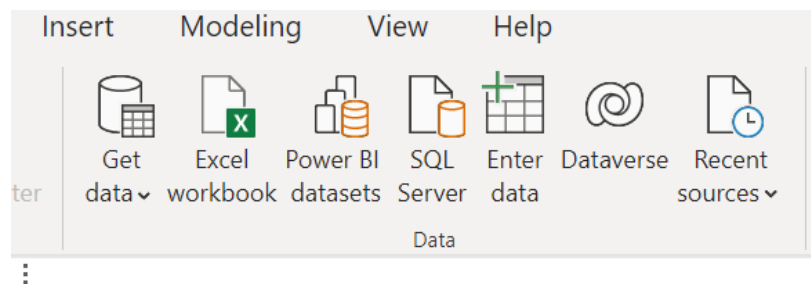
Step 2: In the SQL Server database dialog, write the name of your server, and select 'DirectQuery'. You can also specify the name of your database. Click 'Ok'.

Analyzing Amazon Sales Data

Step 3: In the navigation panel, select your data which you want to analyze and visualize. Click 'Load'.

Step 4: On the right-hand side of your screen, you will get your table data. Now you can visualize it, according to your need.
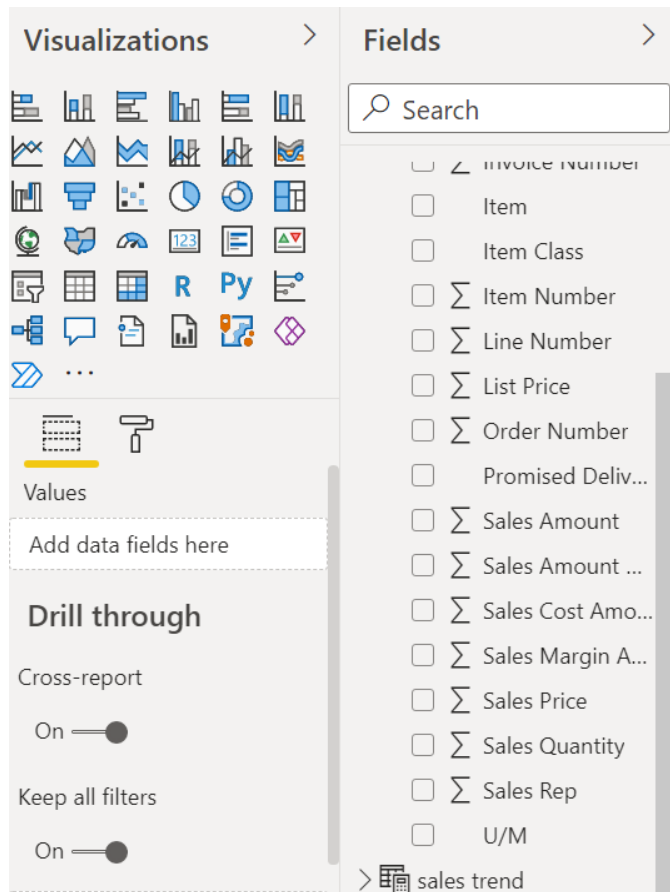
This is how you connect SQL SERVER with PowerBi, now we can start analysis.

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