Architecture

Heart Disease Diagnostic - Analysis

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1. Introduction

1.1 What is Architecture design document?

Any software needs the architectural design to represents the design of software. IEEE defines architectural design as "the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system." The software that is built for computer-based systems can exhibit one of these many architectures.
Each style will describe a system category that consists of :
• A set of components (eg: a database, computational modules) that will perform a function required by the system.

• The set of connectors will help in coordination, communication, and cooperation between the components.

• Conditions that how components can be integrated to form the system.

• Semantic models that help the designer to understand the overall properties of the system.

1.2 Scope

Architecture Design Document (ADD) is an architecture design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the design principles may be defined during requirement analysis and then refined during architectural design work.

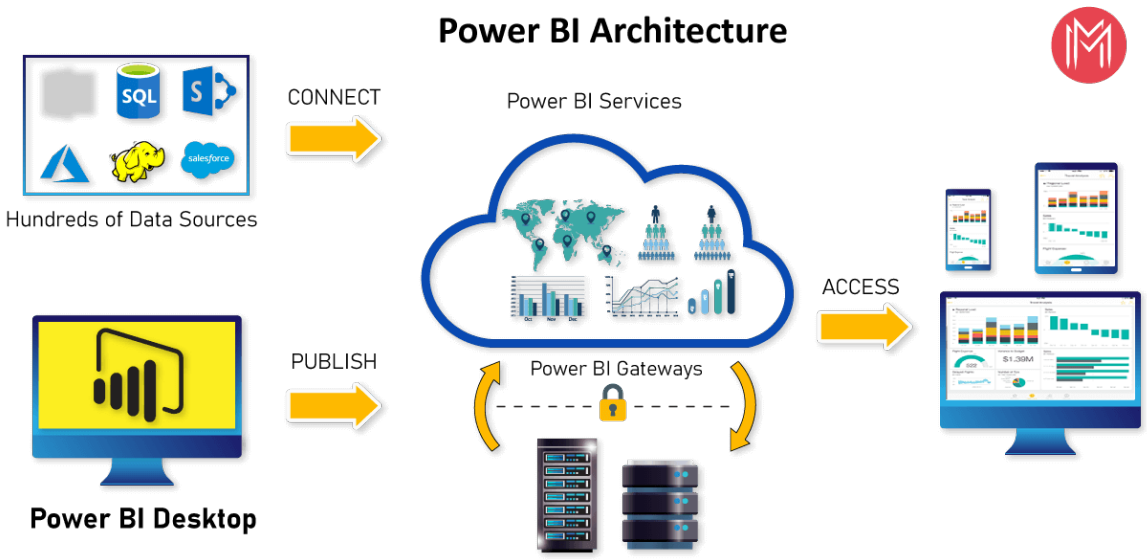
2. Architecture

2.1. Power BI Architecture

Power BI is a business suite that includes several technologies that work together. To deliver outstanding business intelligence solutions, Microsoft Power BI technology consists of a group of components such as:

- Power Query (for data mash-up and transformation)
- Power BI Desktop (a companion development tool)
- Power BI Mobile (for Android, iOS, Windows phones)
- Power Pivot (for in-memory tabular data modelling)
- Power View (for viewing data visualizations)
- Power Map (for visualizing 3D geo-spatial data)
- Power Q&A (for natural language Q&A)

Power BI user takes data from various data sources such as files, Azure source, online services, Direct Query or gateway sources. Then, they work with that data on a client development tool such as Power Bi Desktop. Here, the imported data is cleaned and transformed according to the user's needs. Once the data is transformed and formatted, it is ready to use in making visualizations in a report. A report is a collection of visualizations like *graphs, charts, tables, filters, and slicers.*



2.2 Components

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
- Facebook
- GitHub

2. **Power BI Desktop**

It is a free development, authoring, and publishing tool of Power BI. It is a user interaction platform from where users can connect to multiple data sources, transform and clean data, visualize and create reports. Power BI Desktop is a user-friendly development platform leveraging on all the capabilities of Power BI.
One can easily connect to multiple data sources and consolidate the data from them into one data model which is known as modeling. The data models structure the imported information (data), create associations and relations between data values, etc. One can also represent the data in the form of a variety of visualizations available in Power BI Desktop. You can share your creations made in Power BI as reports and dashboards to other users for

analysis and collaboration. The most common users of Power BI Desktop are data analysts, BI professionals, report creators, or simple business users.

3. **Power BI Service**

Power BI Service is a web-based platform from where you can share reports made on Power BI Desktop, collaborate with other users, and create dashboards.
It is available in three versions:

- Free version
- Pro version
- Premium version

Power BI Service is also known as, “Power BI.com”, “Power BI Workspace”, “Power BI Site” and “Power BI Web Portal”.
Users can access the reports and dashboards from Power BI Service using client platforms like websites, mobile devices, etc. This means that every client who wants to access content created on Power BI needs to interact with Power BI Service. And so, we must take a look under the hood and learn how Power BI Service works.

Power BI Service’s architecture consists of two parts:

- A front end
- A back end

4. **Power BI Report Server**

The Power BI Report Server is similar to the Power BI Service. The only difference between these two is that Power BI Report Server is an on-premise platform. It is used by organizations who do not want to publish their reports on the cloud and are concerned about the security of their data.

Power BI Report Server enables you to create dashboards and share your reports with other users following proper security protocols. To use this service, you need to have a Power BI Premium licens

5. **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.

3. Deployment

3.1 Power BI Deployment

Now, once you have created a report in Power BI Desktop, you can use the **Publish** option to share it with others. Publishing a report to **Power BI Service** having Power BI license is necessary. You can share the report at any location of Power BI Service such as your personal workspace, team workspace, or elsewhere.

3.2 Publishing Reports