# FSDA POWER BI ASSIGNMENT

## 1. Explain the advantages of Natural Queries in PowerBi with an example

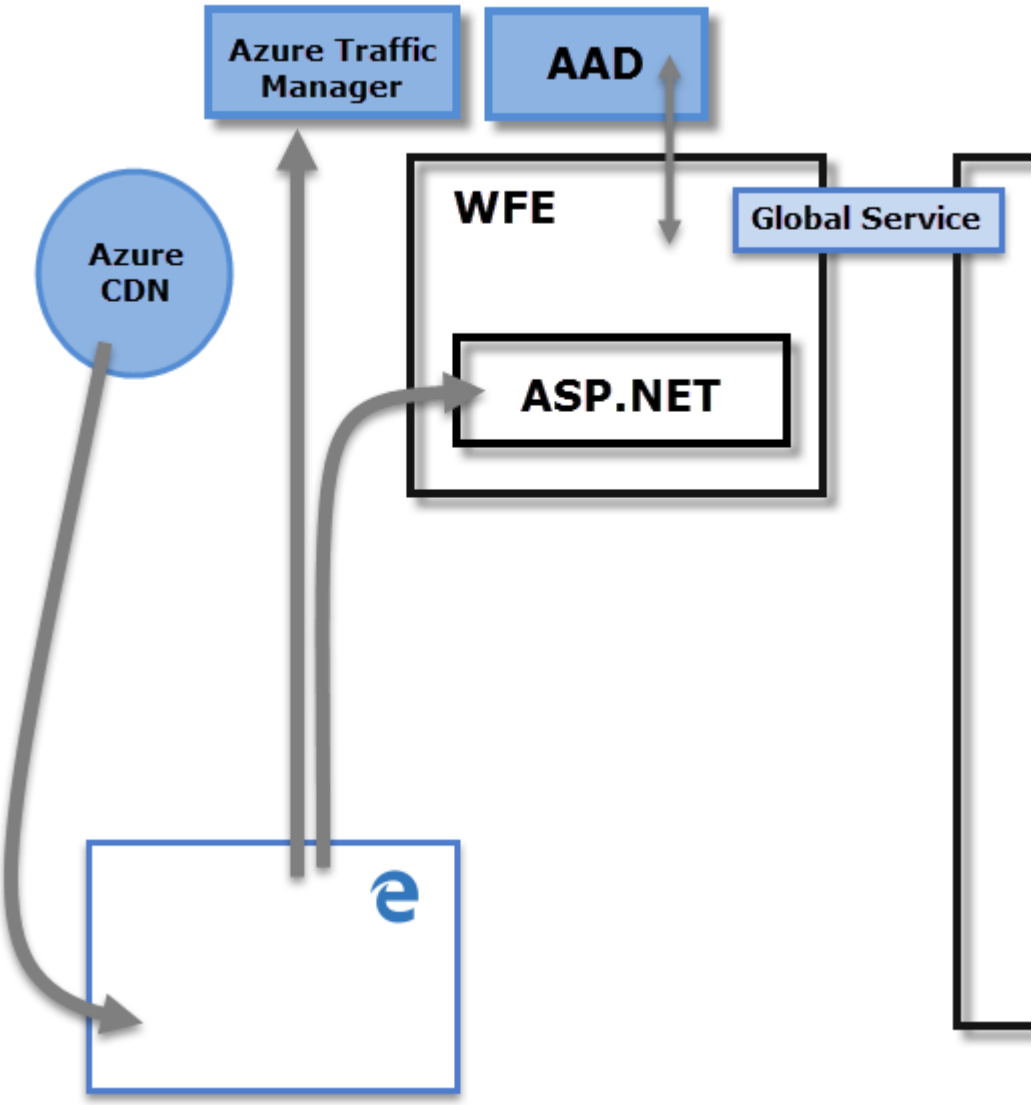
Even before you start typing, Q&A displays a new screen with suggestions to help you form your question. Start either from one of the suggested questions or type your own questions. Q&A supports a wide range of questions, including but not limited to:

- **Ask natural questions** Which sales has the highest revenue?
- **Use relative date filtering** Show me sales in the last year
- **Return only the top N** Top 10 products by sales
- **Provide a filter** Show me sales in the USA
- **Provide complex conditions** Show me sales where product category is Category 1 or Category 2
- **Return a specific visual** Show me sales by product as pie chart
- **Use complex aggregations** Show me median sales by product
- **Sort results** Show me top 10 countries/regions by sales ordered by country or region code
- **Compare data** Show me date by total sales vs total cost
- **View trends** Show me sales over time

## 2. Explain Web Front End(WFE) cluster from Power BI Service Architecture?

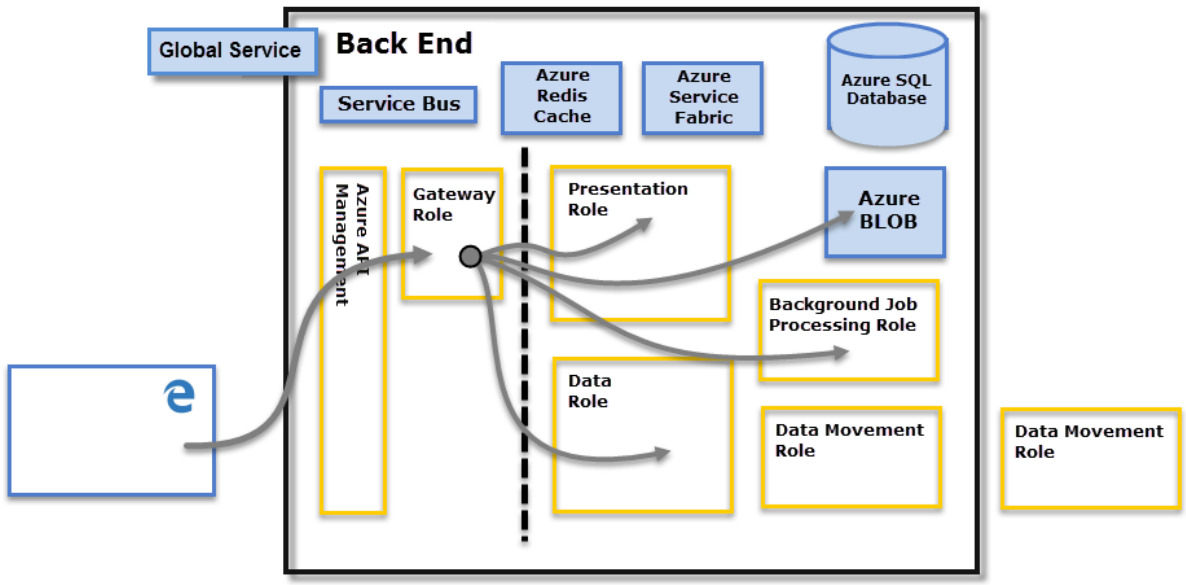
The Power BI service is built on **Azure**, which is Microsoft's cloud computing infrastructure and platform. The Power BI service architecture is based on two clusters – the Web Front End (**WFE**) cluster and the **Back-End** cluster. The WFE cluster manages the initial connection and authentication to the Power BI service, and once authenticated, the Back-End handles all subsequent user interactions. Power BI uses Azure Active Directory (AAD) to store and manage user identities, and manages the storage of data and metadata using Azure BLOB and Azure SQL Database, respectively.

Each Power BI deployment consists of two clusters – a Web Front End (**WFE**) cluster, and a **Back-End** cluster. The **WFE** cluster manages the initial connection and authentication process for Power BI, using AAD to authenticate clients and provide tokens for subsequent client connections to the Power BI service. Power BI also uses the **Azure Traffic Manager** (ATM) to direct user traffic to the nearest data centre, determined by the DNS record of the client attempting to connect, for the authentication process and to download static content and files. Power BI uses the **Azure Content Delivery Network** (CDN) to efficiently distribute the necessary static content and files to users based on geographical locale.



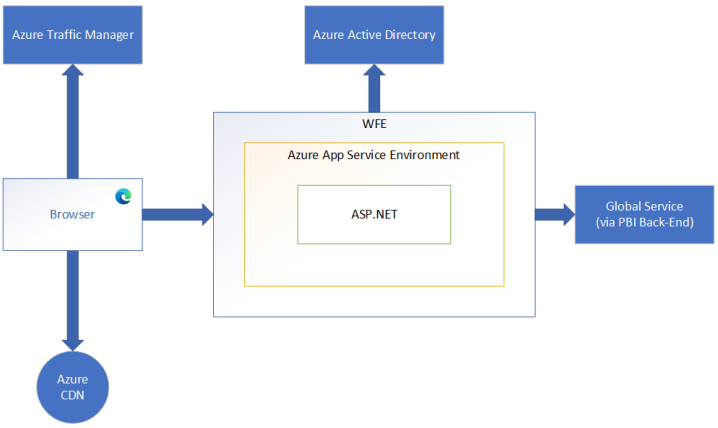

3. Explain Back End cluster from Power BI Service Architecture?

The **Back-End** cluster is how authenticated clients interact with the Power BI service. The **Back-End** cluster manages visualizations, user dashboards, datasets, reports, data storage, data connections, data refresh, and other aspects of interacting with the Power BI service. The **Gateway Role** acts as a gateway between user requests and the Power BI service. Users do not interact directly with any roles other than the **Gateway Role**. **Azure API Management** will eventually handle the **Gateway Role**.




## 4. What ASP.NET component does in Power BI Service Architecture?

The WFE cluster provides the user's browser with the initial HTML page contents on site load, as well as pointers to CDN content used to render the site in the browser.



A WFE cluster consists of an ASP.NET website running in the Azure App Service Environment. When users attempt to connect to the Power BI service, the client's DNS service may communicate with the Azure Traffic Manager to find the most appropriate (usually nearest) data centre with a Power BI deployment. For more information about this process, see Performance traffic-routing method for Azure Traffic Manager. Static resources such as *.*js*, *.*css*, and image files are mostly stored on Azure Content Delivery Network (CDN) and retrieved directly by the browser. Note that Sovereign Government cluster deployments are an exception to this rule, and for compliance reasons will omit the CDN and instead use a WFE cluster from a compliant region for hosting static content.

5. Compare Microsoft Excel and PowerBi Desktop on the following features:
   Data import
   Data transformation
   Modeling
   Reporting
   Server Deployment
   Convert Models
   Cost

- Excel is used to organize data, transform it and perform mathematical operations and calculations. On the other hand, Power BI was conceived as a business intelligence and data visualization tool for businesses.
- Excel has limitations in the amount of data it can work with. In contrast, Power BI can handle much larger amounts of data.
- Power BI can connect to a large number of data sources, while Excel's connectivity capacity is limited. Also, unlike Excel, Power BI can be easily used from mobile devices.
- Power BI has faster processing than Excel.
- Power BI dashboards are more visually appealing, interactive and customizable than those in Excel.
- Power BI is a more powerful tool than Excel in terms of comparison between tables, reports or data files.
- Power Bi is costly while compared to Excel as power bi has 2 different versions such as Pro and Premium that is quite costly for the end user to obtain all the features of power bi

6. List 20 data sources supported by Power Bi desktop.?

- SQL Server database
- Access database
- SQL Server Analysis Services database
- Oracle database
- IBM Db2 database
- IBM Informix database (Beta)
- IBM Netezza
- MySQL database
- PostgreSQL database
- Sybase database
- Teradata database
- SAP HANA database
- SAP Business Warehouse Application Server
- SAP Business Warehouse Message Server
- Amazon Redshift
- Impala
- Google BigQuery
- Vertica
- Snowflake
- Essbase
- Actian (Beta)
- Amazon Athena
- AtScale cubes
- BI Connector
- Data Virtuality LDW
- Denodo
- Dremio Software
- Dremio Cloud (Beta)
- Exasol
- Indexima
- InterSystems IRIS (Beta)
- Jethro (Beta)
- Kyligence
- Linkar PICK Style / MultiValue Databases (Beta)
- MariaDB
- MarkLogic
- TIBCO(R) Data Virtualization