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SUBJECT, MATERIAL & VIDEOS

VIDEOS PROVIDED

POWER BI

Power BI Definitions, Power BI Components
PBI Installation Location and Process
Power BI Accounts Information
Power BI Desktop Over View
Import, Direct Query and Connect Live explanation
FAQS

MSBI

IS, AS, RS & MDS

POWER BI

SERVER, DESKTOP & DAX

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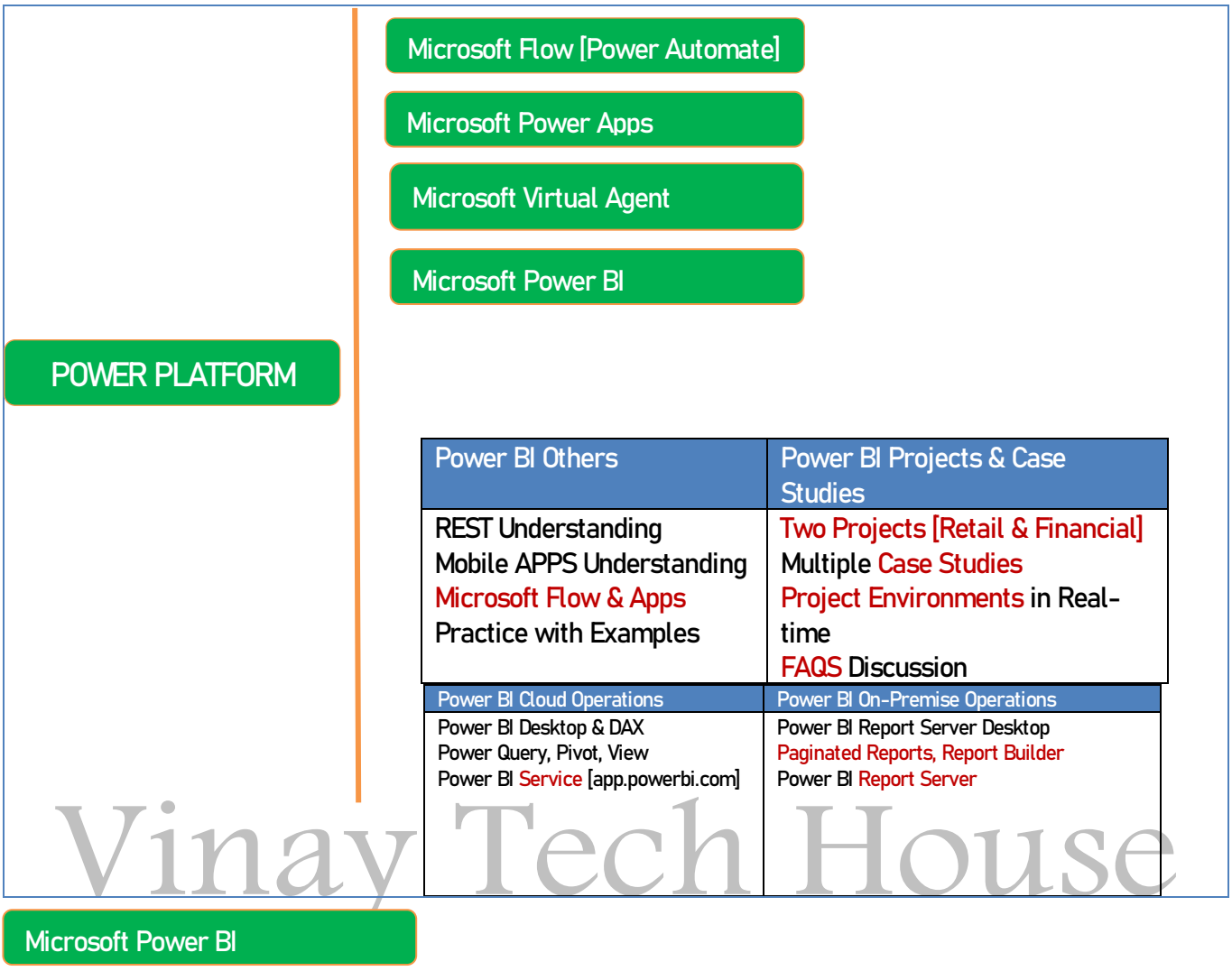


Microsoft Power BI

POWER BI Abbreviation:

"Powering BI"

Adding Power to BI

POWER BI Pronunciation:

POWER BI "SSBI Application / Software / Service"

MICROSOFT Corporation definition:

Power BI is a "business analytics service" that "delivers insights" to enable "fast, informed decisions."

- **Transform data into stunning visuals and share them with colleagues on any device.**
- **Visually explore and analyze data—on-premises and in the cloud—all in one view.**
- **Collaborate on and share customized dashboards and interactive reports.**
- **Scale across your organization with built-in governance and security.**

Microsoft Flow [Power Automate]

Microsoft Flow is a process and task automation tool that helps connect different applications and services together. ... **Microsoft** itself defines **Flow** as a tool to "create automated workflows between your favorite apps and services to get notifications, synchronize files, collect data and more"

Microsoft Power Apps

Power Apps is a suite of apps, services, connectors and data platform that provides a rapid application development environment to build custom apps for your business needs. ... Further, apps built using **Power Apps** have a responsive design, and can run seamlessly in browser or on mobile devices (phone or tablet).

Microsoft Virtual Agent

Power **Virtual Agents** lets you create powerful chatbots that can answer questions posed by your customers, other employees, or visitors to your website or service. These bots can be created easily without the need for data scientists or developers.

DEMO CONCLUSION

POWER BI [MICROSOFT POWER BI] –SSBI

DEFINITION

POWER BI is a

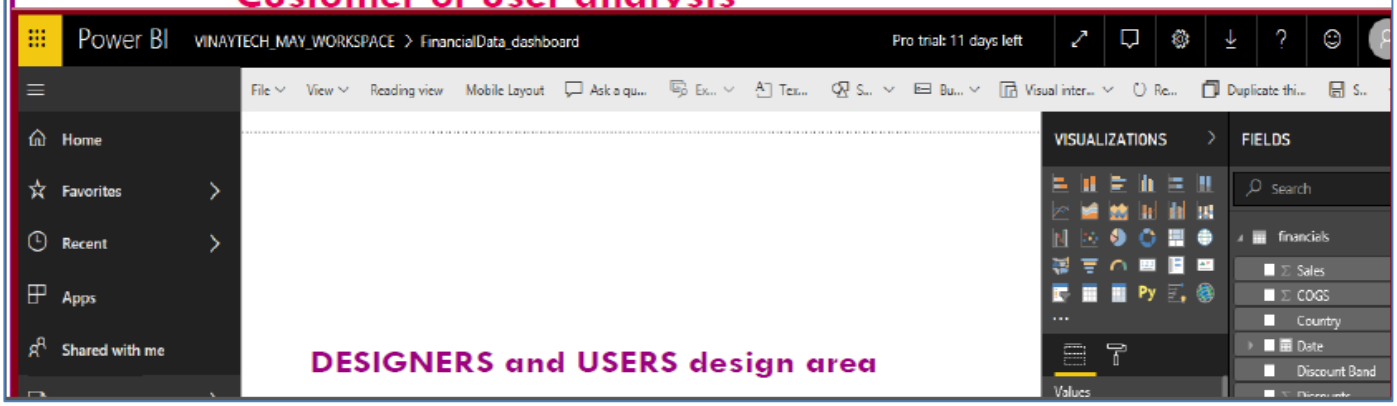
" SELF SERVICE,
Cloud based and On-Premises,
Any Type of Data load,
Data Model Supportive,
Analytical, and
Visualization Reporting tool "

Designed for DWH & BI solution, and Data "Insights and Analytics".

POWER BI [MICROSOFT POWER BI] –SSBI

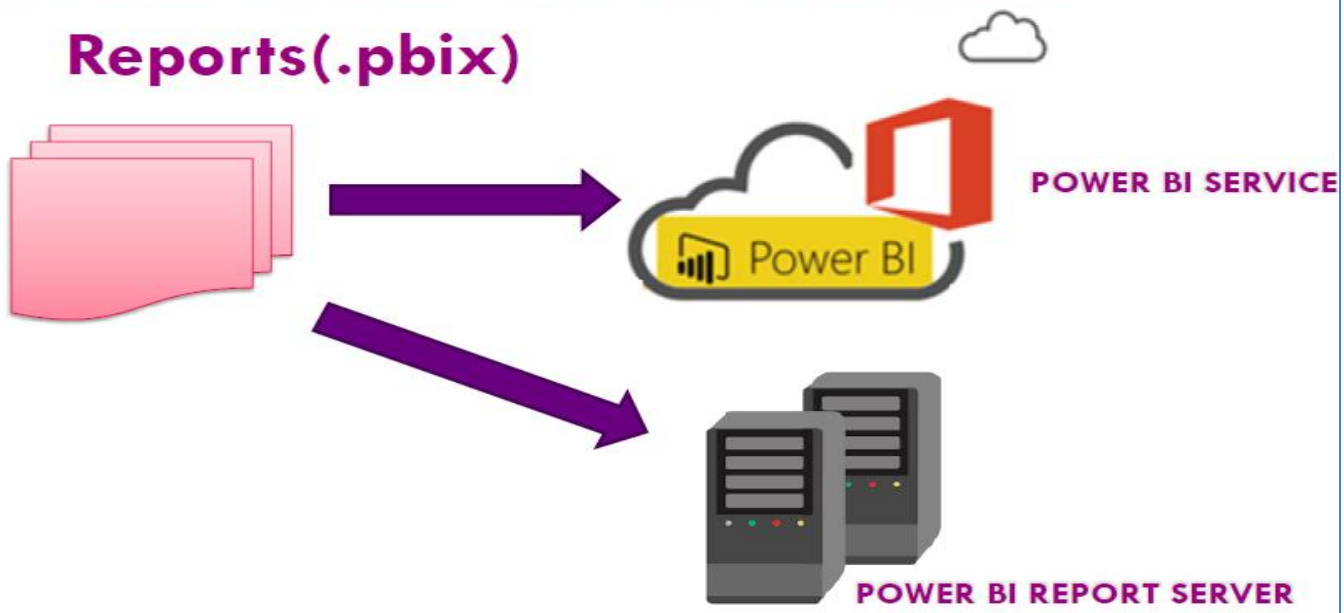
SELF SERVICE

Personal Analysis
Team Analysis
Corporate Analysis
Designer Analysis ***
Customer or user analysis ***



POWER BI [MICROSOFT POWER BI] –SSBI

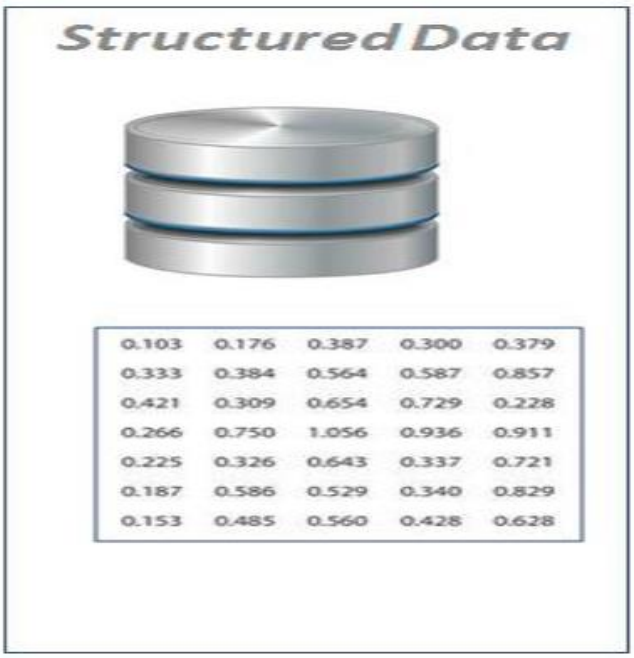
CLOUED BASED OR ON-PREMISES

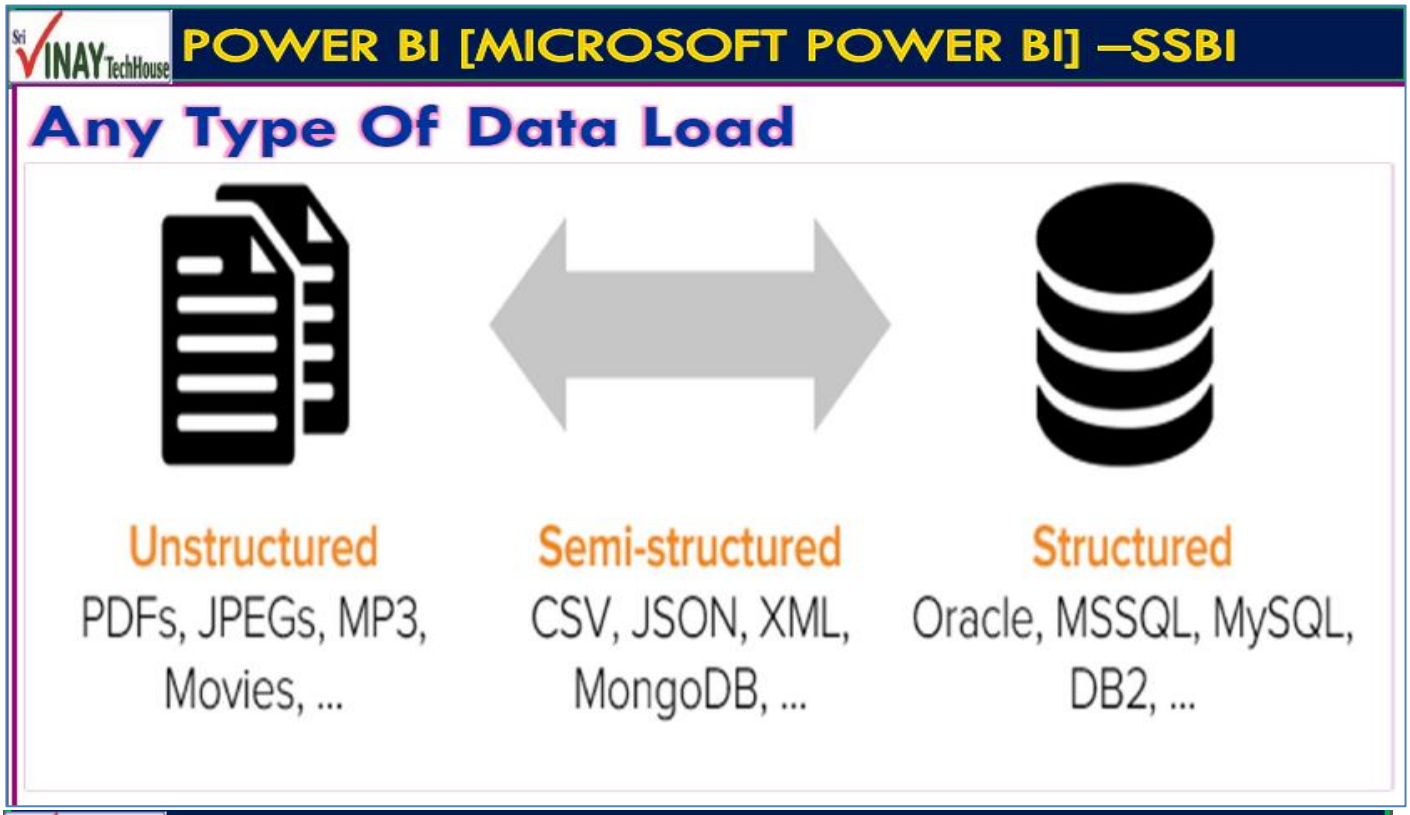


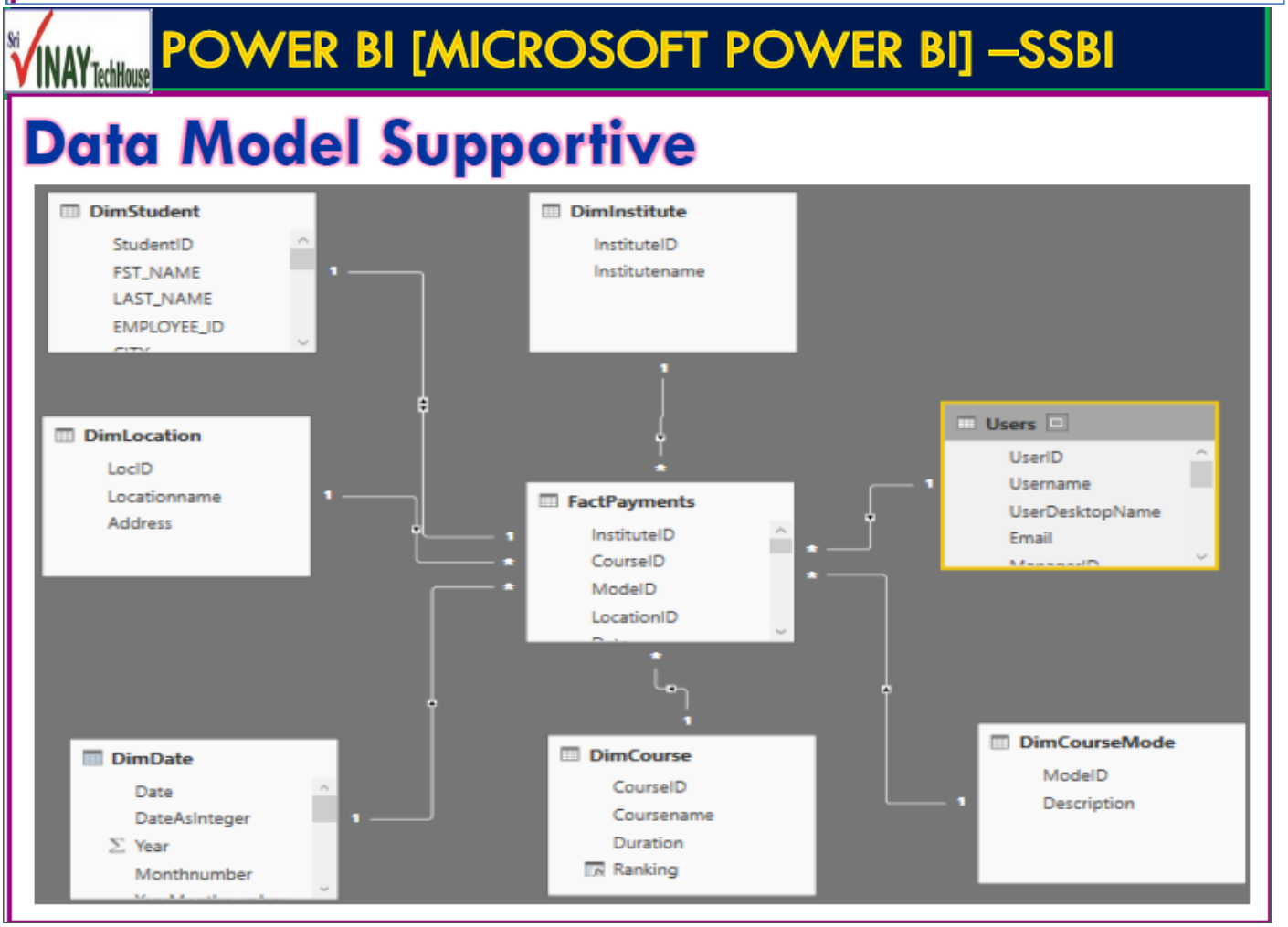
POWER BI [MICROSOFT POWER BI] –SSBI

Any Type Of Data Load

a) Structured b)Semi-Structured c)Unstructured

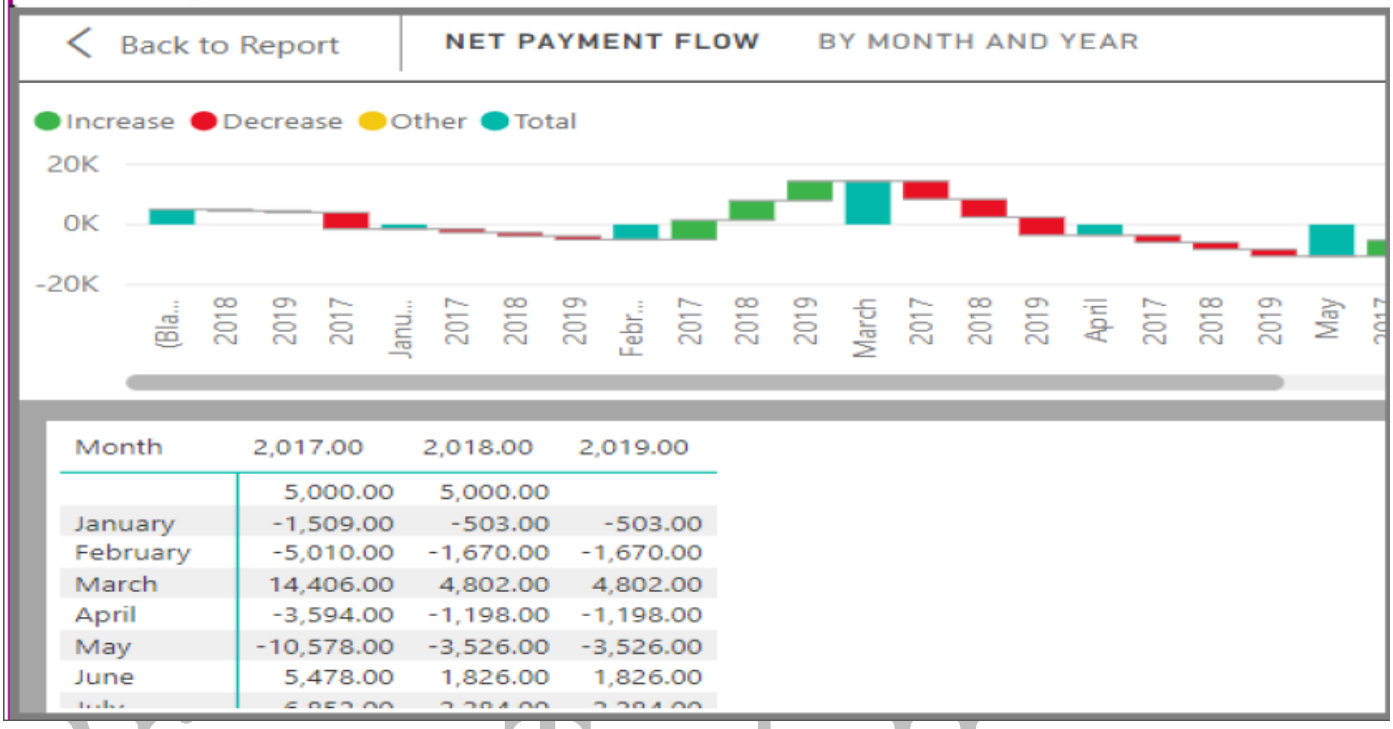



POWER BI [MICROSOFT POWER BI] –SSBI
Any Type Of Data Load
Unstructured
PDFs, JPEGs, MP3, Movies, ...
Semi-structured
CSV, JSON, XML, MongoDB, ...
Structured
Oracle, MSSQL, MySQL, DB2, ...


POWER BI [MICROSOFT POWER BI] –SSBI
Data Model Supportive
DimStudent
StudentID
FST_NAME
LAST_NAME
EMPLOYEE_ID
DimInstitute
InstituteID
Institutename
DimLocation
LocID
Locationname
Address
FactPayments
InstituteID
CourseID
ModelID
LocationID
Users
UserID
Username
UserDesktopName
Email
DimDate
Date
DateAsInteger
Year
Monthnumber
DimCourse
CourseID
Coursename
Duration
Ranking
DimCourseMode
ModelID
Description

POWER BI [MICROSOFT POWER BI] –SSBI

Analytical [Browse, view, and take decisions]

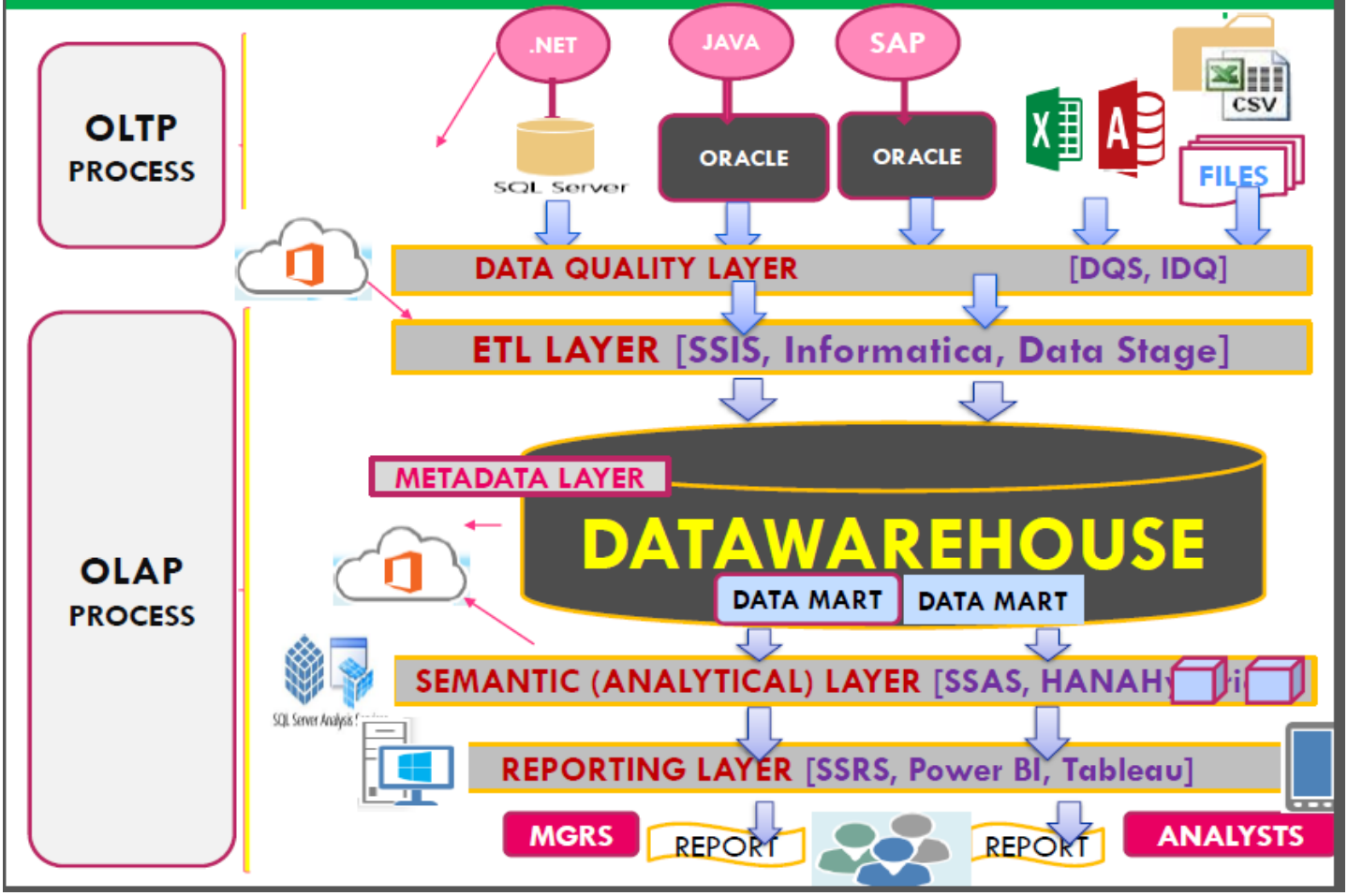


Month	2,017.00	2,018.00	2,019.00
	5,000.00	5,000.00	
January	-1,509.00	-503.00	-503.00
February	-5,010.00	-1,670.00	-1,670.00
March	14,406.00	4,802.00	4,802.00
April	-3,594.00	-1,198.00	-1,198.00
May	-10,578.00	-3,526.00	-3,526.00
June	5,478.00	1,826.00	1,826.00

POWER BI [MICROSOFT POWER BI] –SSBI

Visualization reporting tool

MODERN DATAWAREHOUSE AND BUSINESS INTELLIGENCE SYSTEM



DATAWAREHOUSE LAYERS EXPLANATION AND TOOLS USED

DATA WAREHOUSE:

Data "**Huge Storage**"

Usually a database acts like warehouse if it stores more data.

Databases used for warehouses: Teradata, Oracle, SQLServer, DB2, Sybase etc...

ETL LAYER: Extract Transform Load

Retrieves the data, apply Transformations, and then Loads the data.

Tools:

Informatica, Datastage, Abinitio, ODI, Talend, SAS-ETL, Pentaho ETL, Azure Data Factory etc...

SEMANTIC LAYER:

Converts normal data into decision making data.

There are two types of decision conversion

a) Multidimensional data presentation

b) Tabular data presentation

Tools: SSAS, Hyperion Essbase, SAP BO Cubes etc...

REPORTING LAYER:

Represents the data with visuals [Chart, Matrix, Table, KPIs, Gauges etc...]

Tools:

SSRS, Power BI, Cognos, SAP BO, Microstrategy, OBIEE, SAS, Tableau, Qlik View etc...

DATA QUALITY LAYER:

Ensures data quality of before processing through ETL by "profiling", "scrubbing", and "cleansing"

Tools:

DQS, IDQ.

METADATA MANAGEMENT LAYER:

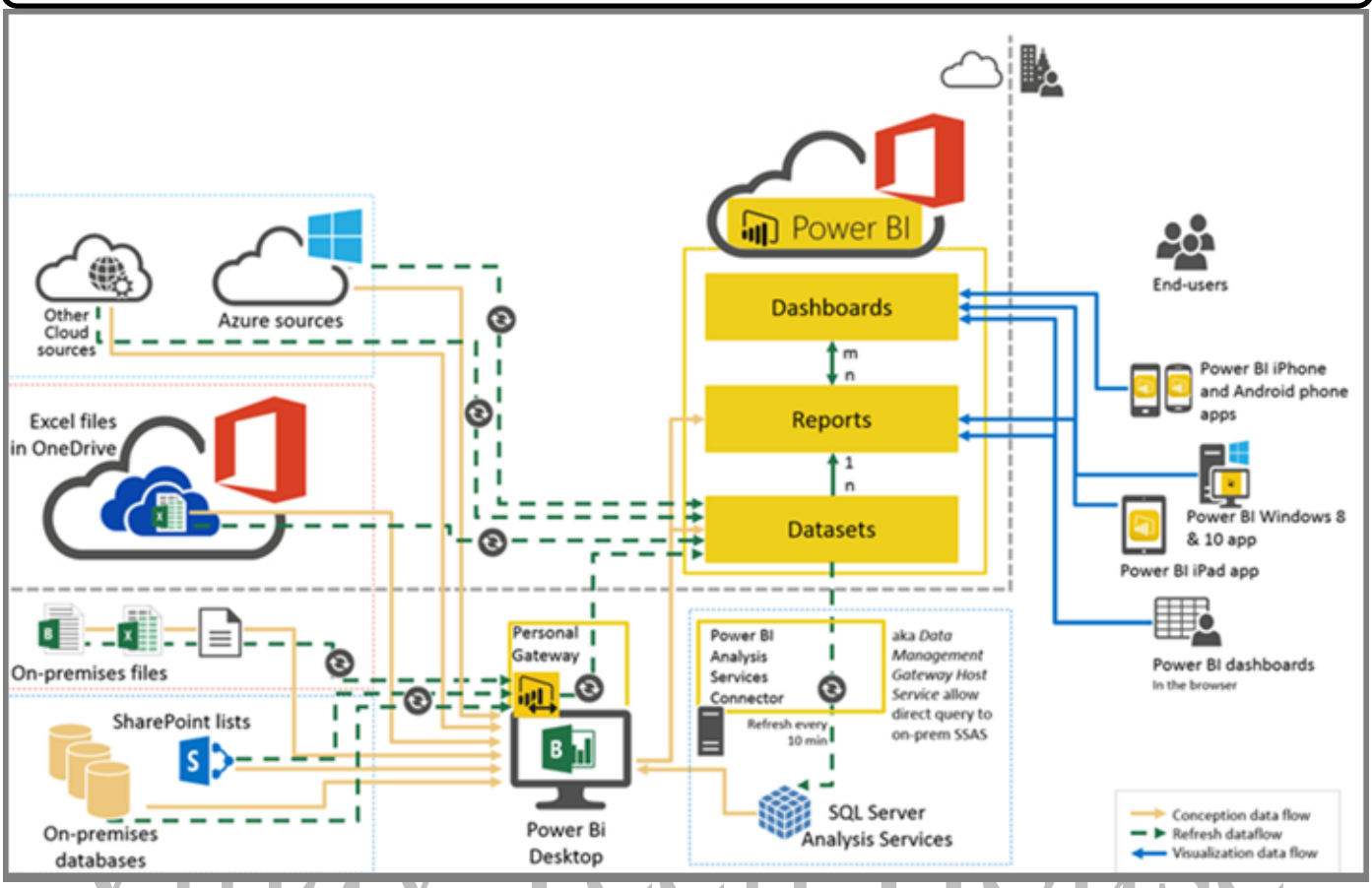
Manages master data or metadata of the objects in the data warehouse.

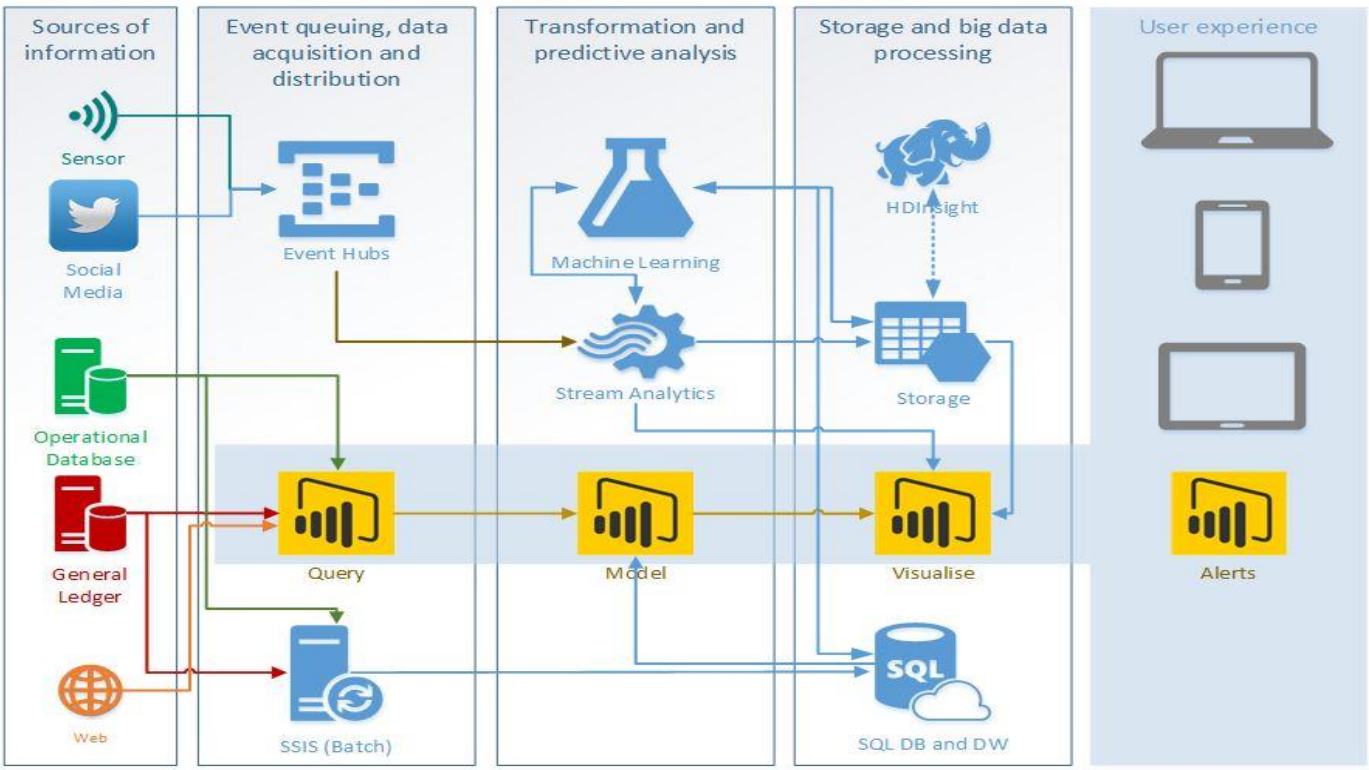
Tools:

MDS, MDM.

DAY-DAY BUSINESS PROCESS [OLTP]	DAY-DAY ANALTYLICAL PROCESS [OLAP]
Front-End App----->Back-end DB (Ex: .Net) (Ex: Sql Server) • Web or Desktop pages, apps etc... • Daily data storage • Less volume of data • Current data [last one month, quarter or year] **Database in less size** Database in Normalized format	Layered Process OLTP→ODS→Stage→EDW→DW • Analytical and reporting tools • Daily data analysis • More volume of data • Years and years data **Database in more size** Database in DE normalized format

DATA FEEDS, POWER BI PROCESS, AND POWER BI INSIGHTS & ANALYTICS





CAPABILITY COMPRISONS OF TABLEAU, QILKVIEW, AND POWER BI

Capabilties Overview

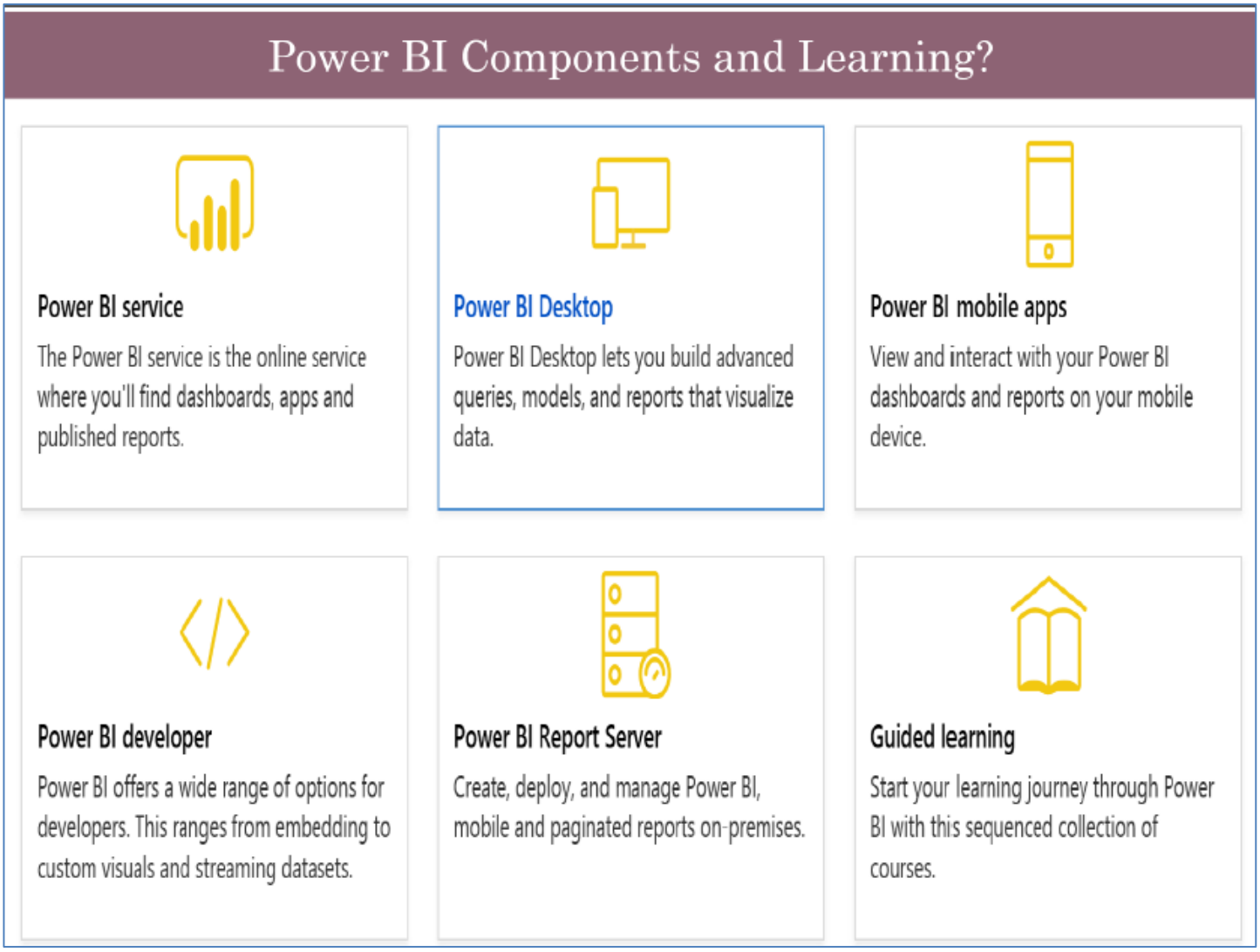
Our comparison of Tableau. QlikView and Microsoft Power BI considers the visualizations, analytics, OLAP, document management, decision services and integration features of the three systems. Tableau is the superior visualization tool and QlikView holds the advantage in analytics, but Power BI tops the competition for its decision services and integration capabilities.

	tableau	QlikView	Power BI
Data Visualization *Data is presented visually for easy interpretation.*	✓ ADVANTAGE	✓	✓
Analytics *Information is quantified and evaluated for a portrait of company trends and future possibilities.*	✓	✓ ADVANTAGE	✓
Online Analytical Processing (OLAP) *OLAP functionalities provide access to databases and web-based analysis.*	✓	✓	✓
Document Management *Convert reports into different file formats and share analytical findings.*	✓	✓	✓
Decision Services *Financial management features provide analysis of monetary information.*	✓	✓	✓ ADVANTAGE
Integrations *The ability to connect with other systems provides multiple sources and functionalities.*	✓	✓	✓ ADVANTAGE
Big Data Integration *Access big data programs for comprehensive analysis.*	✓	✓	✓ ADVANTAGE

BI Process, Power BI, MSBI, other BI tools

Standard BI Process	MSBI Suite	Other BI Tools	Modern [Power BI]— SSBI Tool
Getting Data [Extract Transform Load] [**ETL layer**]	**SSIS**	Informatica, Datastage Talend, ODI etc…	**Power Query** [70%] for ET (no Load)
Maintain Huge Storage [**Data warehouse**]	**SQL SERVER**	Teradata, Oracle, DB2	**Power BI Dataset** Medium [1GB]
Data Conversion and Model Area [**Semantic or Modeling**]	**SSAS**	Hyperion, SAP BO, SAP HANA, etc…	**Power Pivot** [60-70%]
Data presentation Area [**Reporting layer**]	**SSRS**	Microstrategy, Cognos, BO,Crystal Reports etc…	**Power View**

POWER BI IMPORTANT COMPONENTS



a) Power BI Desktop: Loads, Transforms, Models and Generate reports.

b) Power BI Service: Cloud Service for managing reports and dashboards, and providing schedules.

This service under the control of Microsoft.

c) Power BI Server: Standalone on premises server [similar to SSRS], controlled by the customer.

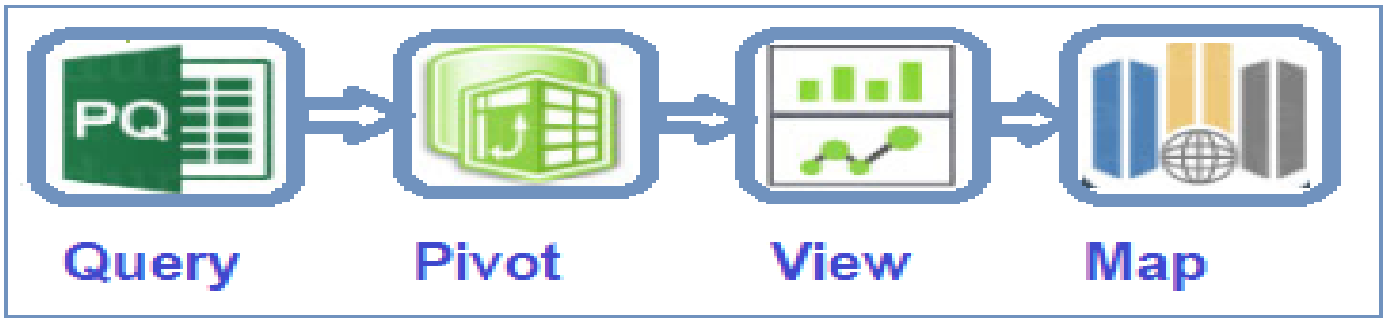
d) Power BI Mobile Application: Helps to create Mobile Friendly reports.

e) Power View: Report Building component

f) Power Pivot: Data Load, Transform, Model and Data Presentation. [Chart, Table]

g)Power BI Gateway: To establish connection to the Databases for Live Refresh / Scheduled Refresh

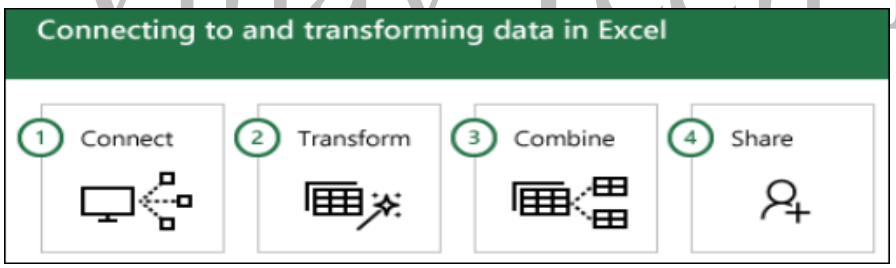
h)Power BI Desktop for Report Server : Specially designed to create report server reports.



Power Query

Power Query is a **data connection technology** that enables you **to discover, connect, combine, and refine data sources to meet your analysis needs.** Features in Power Query are available in Excel and Power BI Desktop.

Using Power Query often follows a few common steps.



Power Pivot

Power Pivot is a **data modeling technology** that lets you create data models, establish relationships, and create calculations. With Power Pivot you can work with large data sets, build extensive relationships, and create complex (or simple) calculations, all in a high-performance environment, and all within the familiar experience of Excel.

Power View

Power View is a **data visualization technology that lets you create interactive charts, graphs, maps, and other visuals that bring your data to life. Power View is available in Excel, in SharePoint, SQL Server, and Power BI.**

There are a few system requirements for Power View, based on which version of Excel, SharePoint, or SQL Server you use. The visualizations in Power View are also available in Power BI and the Power BI Designer.

Power Map

Power Map is a **3D data visualization tool for Excel** that provides an immersive experience for making discoveries in data that might never be seen in traditional 2D tables and charts. **Power Map** lets you plot geographic and temporal data visually, analyze that data in 3D, and create cinematic tours to share with others.

Other components

Microsoft PowerApps

PowerApps is an initiative by Microsoft that allows developers and nontechnical users to build mobile applications from selectable templates. Using Microsoft Azure, the platform as a service offering, and built-on development tools that target nontechnical users (this suite of tools was formerly known as Project Siena), users can create, manage and share business apps on iOS, Android and Windows devices. Microsoft rolled out PowerApps in late 2015.

The objective of PowerApps is to enable business users to build new capabilities via apps, without requiring that they have code expertise. Microsoft touts an intuitive visual design for PowerApps, with drag-and-drop functionality and a familiar look and feel taken from applications like PowerPoint.

PowerApps has connections to various Microsoft-based and third-party applications, including Microsoft SQL Server, SharePoint and OneDrive in the Office 365 productivity suite, as well as Dropbox, Google Docs, SAP, Oracle and Dynamics CRM.

Application programming interfaces to enable these data connections, as well as the apps themselves, are hosted on Microsoft Azure.

Microsoft Flow

Microsoft Flow is cloud-based software that allows employees to create and automate workflows and tasks across multiple applications and services without help from developers. Automated workflows are called **flows**. To create a **flow**, the user specifies what action should take place when a specific event occurs.

Microsoft Flow is a new workflow management tool for automating workflows across applications and services by connecting web services, files, and cloud-based data. It empowers users to create workflows to decrease time-consuming tasks or processes that automate approvals, send/receive notifications, synchronize files, or collect, organize and update data.

INSTALLATION REQUIREMENTS

Minimum requirements

The following list provides the minimum requirements to run **Power BI Desktop**:
Windows 7 / Windows Server 2008 R2, or later .NET 4.5
Internet Explorer 9 or later

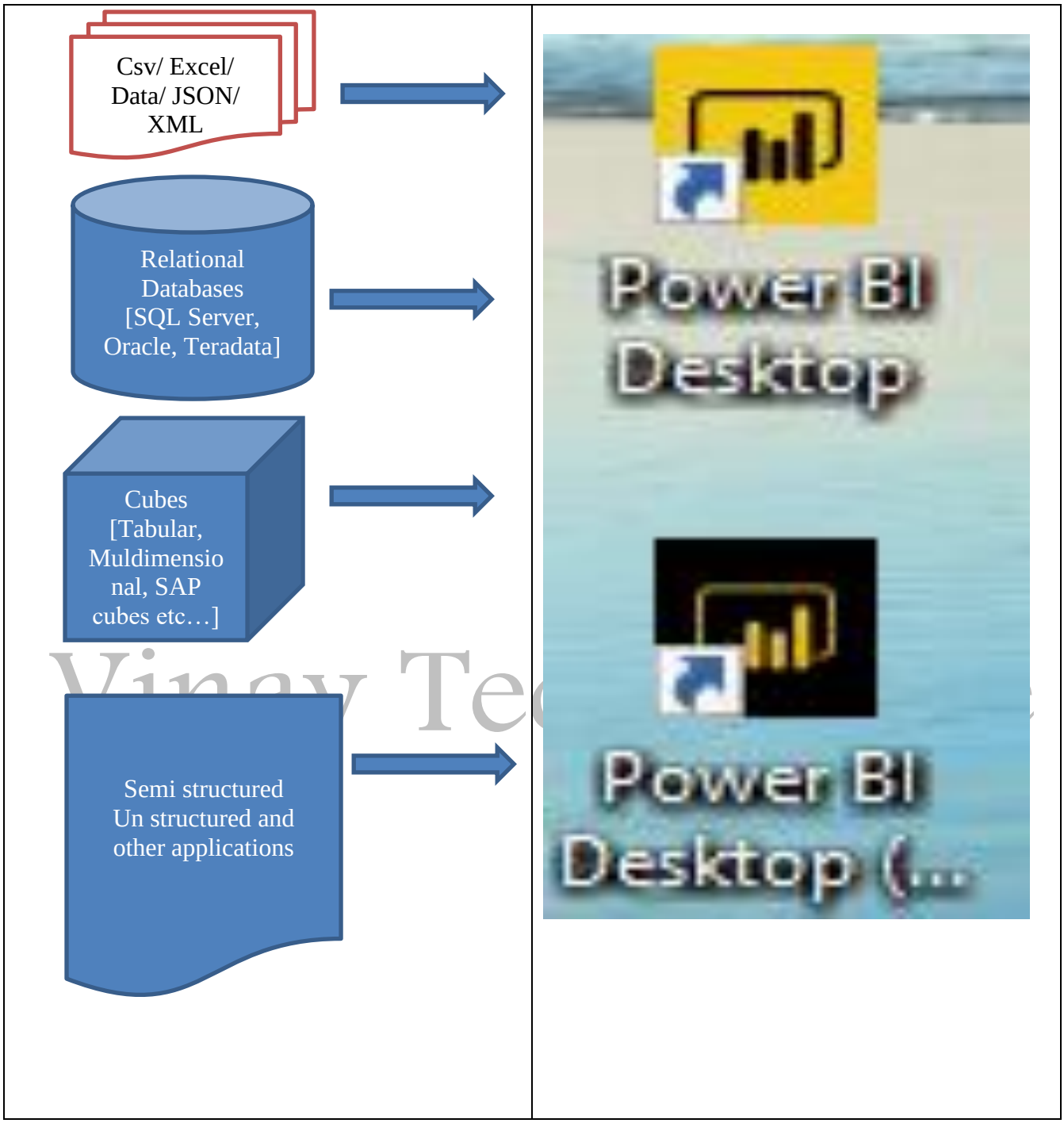
Memory (RAM): At least 1 GB available, 1.5 GB or more recommended.
Display: At least 1440x900 or 1600x900 (16:9) recommended. Lower resolutions such as 1024x768 or 1280x800 are not recommended, as certain controls (such as closing the startup screen) display beyond those resolutions.

Windows Display settings:
If your display settings are set to change the size of text, apps, and other items to more than 100%, you may not be able to see certain dialogs that must be closed or responded to in order to proceed using **Power BI Desktop**. If you encounter this issue, check your **Display settings** by going to **Settings > System > Display** in Windows, and use the slider to return display settings to 100%.
CPU: 1 gigahertz (GHz) or faster x86- or x64-bit processor recommended.

POWER BI IMPORTANT INFORMATION

POWER BI Main Web Site:
https://powerbi.microsoft.com/en-us
Power BI Desktop:
https://powerbi.microsoft.com/en-us/desktop
Power BI Report Server Desktop:
https://powerbi.microsoft.com/en-us/report-server
Power BI Cloud Service:
https://app.powerbi.com
Power BI Developer:
https://powerbi.microsoft.com/en-us/developers
Power BI Learning:
https://docs.microsoft.com/en-us/power-bi/guided-learning/
Power BI Releases:
https://powerbi.microsoft.com/en-us/blog/power-bi-desktop-may-2018-feature-summary/

REL-TIME POWER BI PROJECTS ENVIRONMENT AWARENESS & DATA FEEDS



Most frequently used Data feeds in Power BI [Trainer's experience]?

1. Files

File [.out, .txt etc...]

Csv File [Comma Separated Value file]

Excel [.xls, .xlsx]

Json: Java Structured Object Notation File [extended with .json]

2. Databases [Relational Databases]

Database [SQL Server (more), Oracle, Teradata, MySQL Database, Amazon RedShift etc...]

Query based retrieval (select statement and get data)

View based (select statement inside view will get data)

Procedure based (select statement inside procedure will get data)

3. Cube Databases [Tabular /multi-dimensional]

SSAS Cubes [Tabular and Multidimensional] and SAP HANA

Analysis Services Cube retrieval

On-Premises

Cloud [Azure]

4.Data retrieval from Web Applications

5.Data retrieval through Python scripting

6.Data retrieval from other web applications through **REST API** protocols [Service now, Face Book, Google Analytics, etc...]

Why companies maintain cubes for decision support?

Cubes hold two or multidimensional information.

There are two types of cubes

1) Tabular Cube [MSBI- Analysis Services]:

a. Data in the format of relational tables

b. Aggregates and calculations created **faster**

c. For less volumes of data and quick analysis of data, tabular cubes are advantage.

2) Multidimensional Cube [MSBI-SSAS, SAP BW and other areas]:

a. Data in the format of dimensional structures [schemas]

b. Aggregates and calculations created

C. For more volumes of data, more calculations and aggregates

Trainer's experience***

Trainer has **5 tabular cubes with size of 10-20GB,** which are suitable for daily reporting.

Trainer has one **multidimensional cube with size of 40GB,** which are suitable for daily reporting, monthly reporting.

Why cubes sizes are less? What about historical data?

Always cubes hold current data [last one month / quarter / year]. So in **GBs**.

Whereas Data warehouses **hold years and years data**. So in **TBs or PBs.**

Explain storage hierarchy? [K-Kilo / thousand, M-Mega, T- Tera, P-Peta]

1 Byte= 8 Bits

1KB=1024Bytes

1MB=1024KB [Kilo byte]

1GB=1024MB[Mega byte]

1TB=1024GB [Giga byte]

1PB=1024TB [Tera byte]

Etc…

What is the size of your warehouse?

Small companies: 10-100TB

Medium: 100TB-1 PB

Large: 1Peta +

What kind of storages Data Lake support?

Minimum Pbs storage.

7. Cloud storages

Azure cloud: To work with SQL Databases, Lakes and Analysis Services

RedShift

WorkDay

Amazon

8.Web Data

Web Urls

Power BI Accounts: Power BI Free, Pro and Power BI Premium

How many types of accounts Power BI Support?

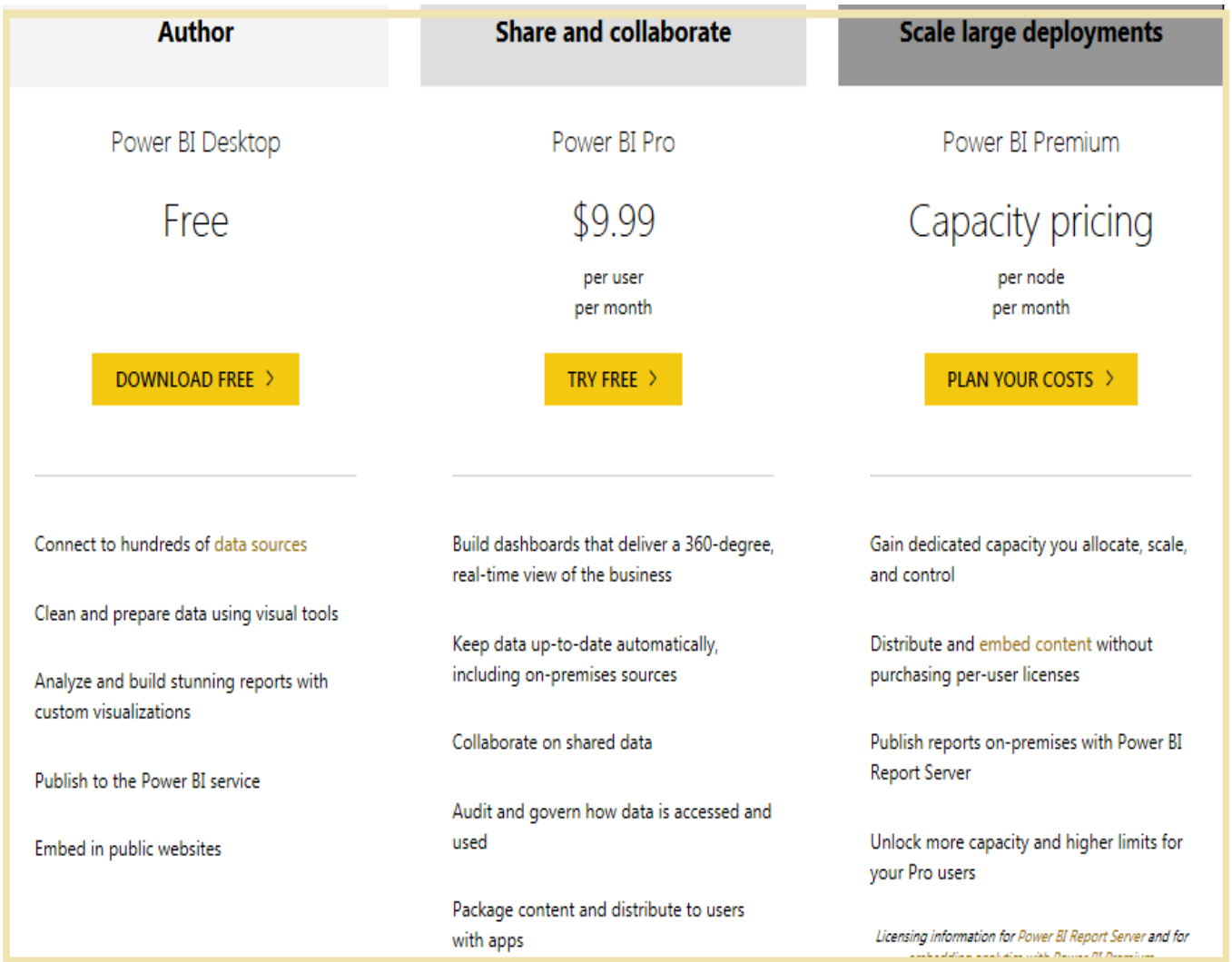
Three types a) Free b) Pro c) Premium

Why Power BI has account kind of process?

It is cloud based and charge according to the storage and users' access.

What kind of accounts your company using?

My company using two P1 accounts, one P2 account and seven Pro accounts. [One Live project]



Free Account

Report Creation, Publishing only

No management options and no storage

Pro account [Limited storage, reports and operations]

1 User 10 Gb Storage and $10 / Month

Note: Institute will give you pro account for practice

Premium Account [Capacity Pricing, more storage, more users and many reports]

It is of three types

a) Premium P1
b) Premium p2
c) Premium p3

Power BI Premium P1

Power BI Premium P1 has the lowest capacity dedicated environment:

8 v-cores:

100 TB storage per node
4 Frontend Cores
4 Backend Cores / **25 GB** RAM
It costs **$5000/month** USD per environment/node.

Power BI Premium P2

16 v-cores:

8 Frontend Cores
8 Backend Cores / **50 GB** RAM
Power BI Premium P2 costs **$10000/month** USD per environment/node.

Power BI Premium P3

32 v-cores:

16 Frontend Cores
16 Backend Cores / **100 GB** RAM

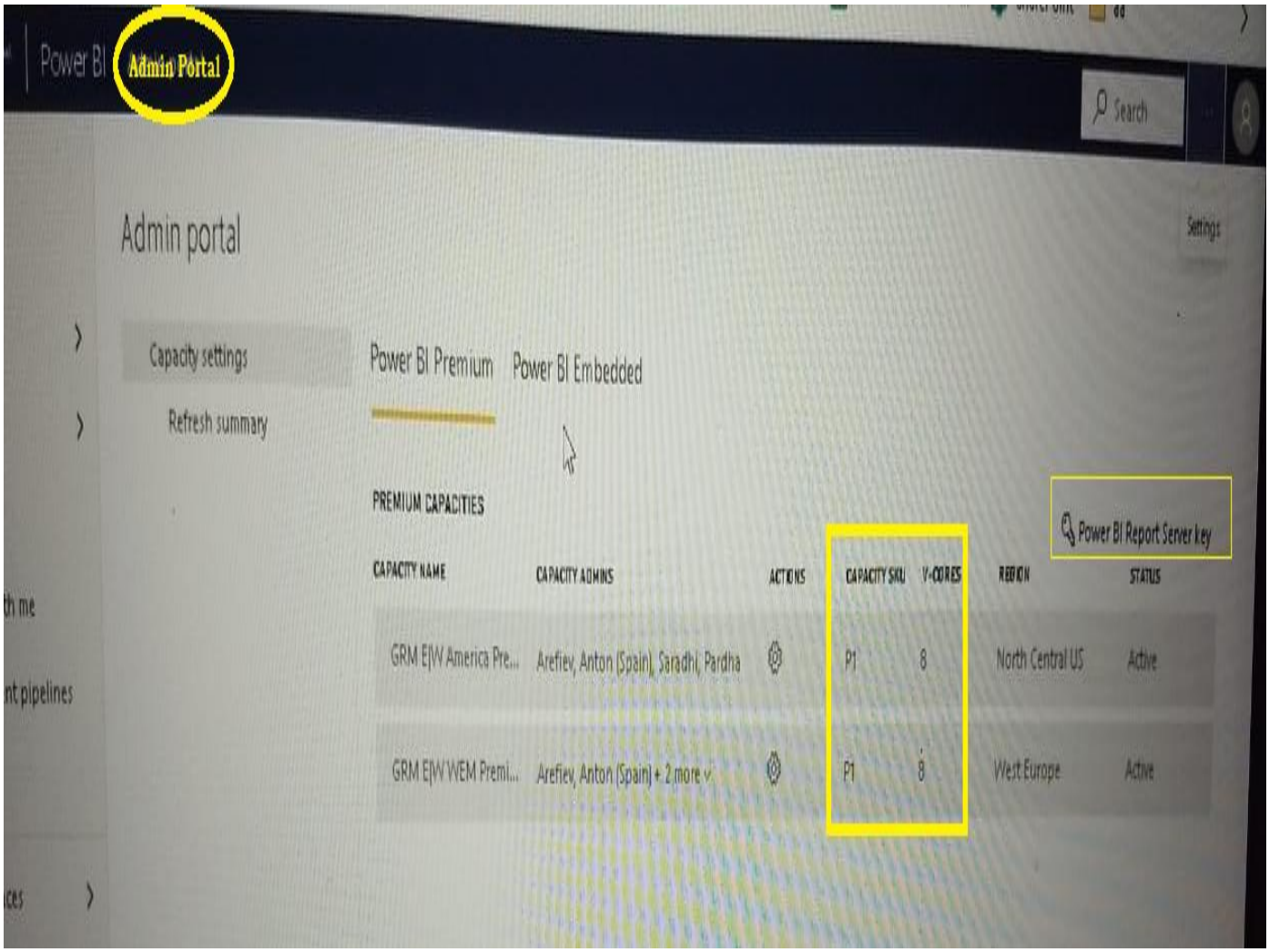
Power BI Premium P3 costs **$20000/month** USD per environment/node.

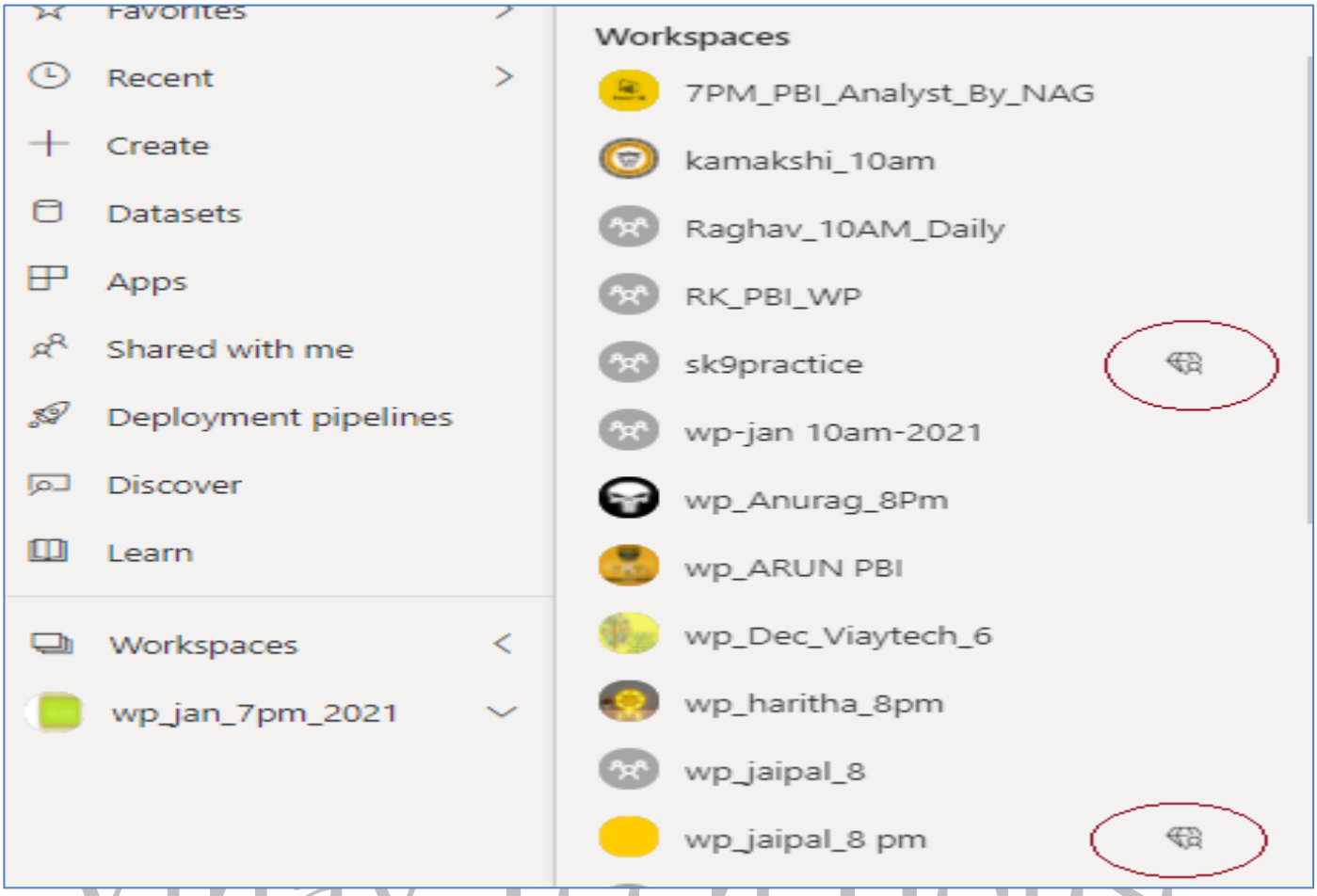
==========

The below is a screen shot from Admin Portal, shows 2 P1 accounts with 8 Core Systems

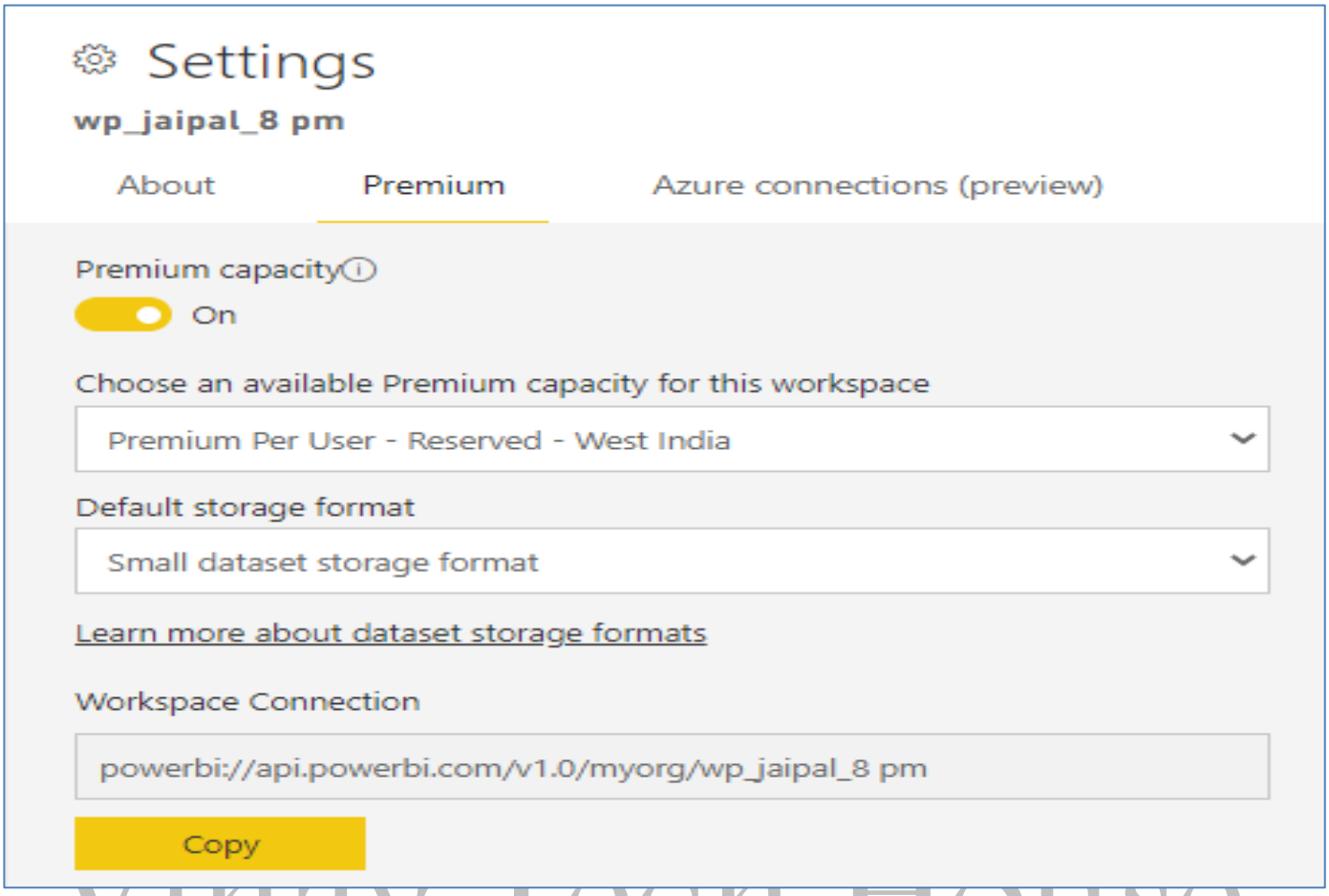
And a Report Server Key which is active.

Note: Report Server Key Indicate On-Premise Storage


Power BI
Admin Portal
Search
Admin portal
Settings
Capacity settings
Refresh summary
Power BI Premium
Power BI Embedded
PREMIUM CAPACITIES
Power BI Report Server key
CAPACITY NAME
CAPACITY ADMINS
ACTIONS
CAPACITY SKU
V-CORES
REGION
STATUS
GRM EJW America Pre...
Arefiev, Anton (Spain); Saradhi, Pardha
P1
8
North Central US
Active
GRM EJW WEM Premi...
Arefiev, Anton (Spain) + 2 more
P1
8
West Europe
Active



Note: Diamond indicate premium workspace



Pro	Premium
With Power BI Pro, users are licensed individually and participate fully in the use of Power BI – both the creation of content and the consumption. All Pro users can connect to hundreds of data sources on-premises and in the cloud, create interactive reports and 360-degree dashboards, share that content with other Pro users, and consume content shared by others.	With Power BI Premium, you are licensing capacity for your content rather than licensing all users of that content. Content (datasets, dashboards, and reports) is stored in Premium and can then be viewed by as many users as you want, without additional per-user costs. These users can only view content, not create it. Viewing includes looking at dashboards and reports on the web, in our mobile apps, or embedded in your organization's portals or apps. The creators of content in Premium still need their own Pro licenses.
For small and large deployments, Power BI Pro works great to deliver full Power BI capabilities to all users. Employees across roles, departments, etc. can engage in ad hoc analysis, dashboard sharing and report publishing, collaboration and other related activities.	
Real-world case: If an organization consists of 200 total users – 50 are engaging in self-service BI, while the remaining 150 are limited to viewing BI content – Power BI Pro is the most economical deployment option for all users within the organization.	**Real-world case:** If the organization consists of 700 total users – 100 are engaging in self-service BI, while the remaining 600 occasionally view BI content – the most economical deployment option would be to license Power BI Pro for the 100 users engaging in self-service BI and to license Power BI Premium for the 600 seeking occasional access to view BI content.

Power BI Free

a)Power BI Free is included in all Office 365 Plans, and you can sign up for Power BI Free any time you like.
b) This free version is surprisingly functional. It allows you to connect to hundreds of data sources (no limit/restriction other than the amount of data you pull in), clean and prepare your data, and build visualizations (no limit).
c) All of the types of visualization options in Power BI Pro are available in Power BI free.

Power BI Pro

a)Power BI Pro is an additional $9.99/user/month ($12.20 CAD). It is also included in Office 365 Enterprise E5.

It adds a bunch of new features:

a)On-Premise Data Gateways

If your data resides On-Premise (not somewhere in the cloud), you can now connect to this data and analyze it. A common example of this is a self-hosted SQL database.

b)More Data Storage

Power BI Pro allows you up to 10 GB per Power BI Pro License. The free version caps you at 1GB per user.

c)Better Data Refreshes

In Power BI Pro, you can better schedule data refreshes so that your team always has the latest version of your data.

d)Sharing and Collaboration

The key feature here: If you want to share data, reports, and dashboards privately – you need to look at Power BI Pro. It allows you to share your data with individual coworkers, or publish enterprise-wide "content packs" and "apps" with row-level data security. You can neither share with others nor consume shared content with Power BI Free. Everyone that you want to share content with must be assigned a Power BI Pro license, UNLESS you decide to upgrade to

Power BI Premium

a)Power BI Premium is not a type of user license. Think of it as an upgrade to your entire company's capabilities.
b) Organizations with Power BI Premium have a super-powered server running their Power BI environment; this allows them to surpass some limits. It is rather expensive ($5000-$20000/mo), so only the largest companies will get use out of it.

Separate Resources
No more "noisy neighbours". Power BI Premium gives you your own processing environment, so your Power BI operations can't be slowed down by other users that aren't even within your company.

More Storage
Your company gets up to 100 TB of data storage to share in Power BI Premium.

Larger Datasets
Power BI Premium allows you to work with datasets up to 50 GB in size.

Free User Sharing Access
If you use Power BI Premium, then free users are able to consume shared dashboards.

More
Having your own processing capacity allows for other cool features. Here's a more in-depth overview.

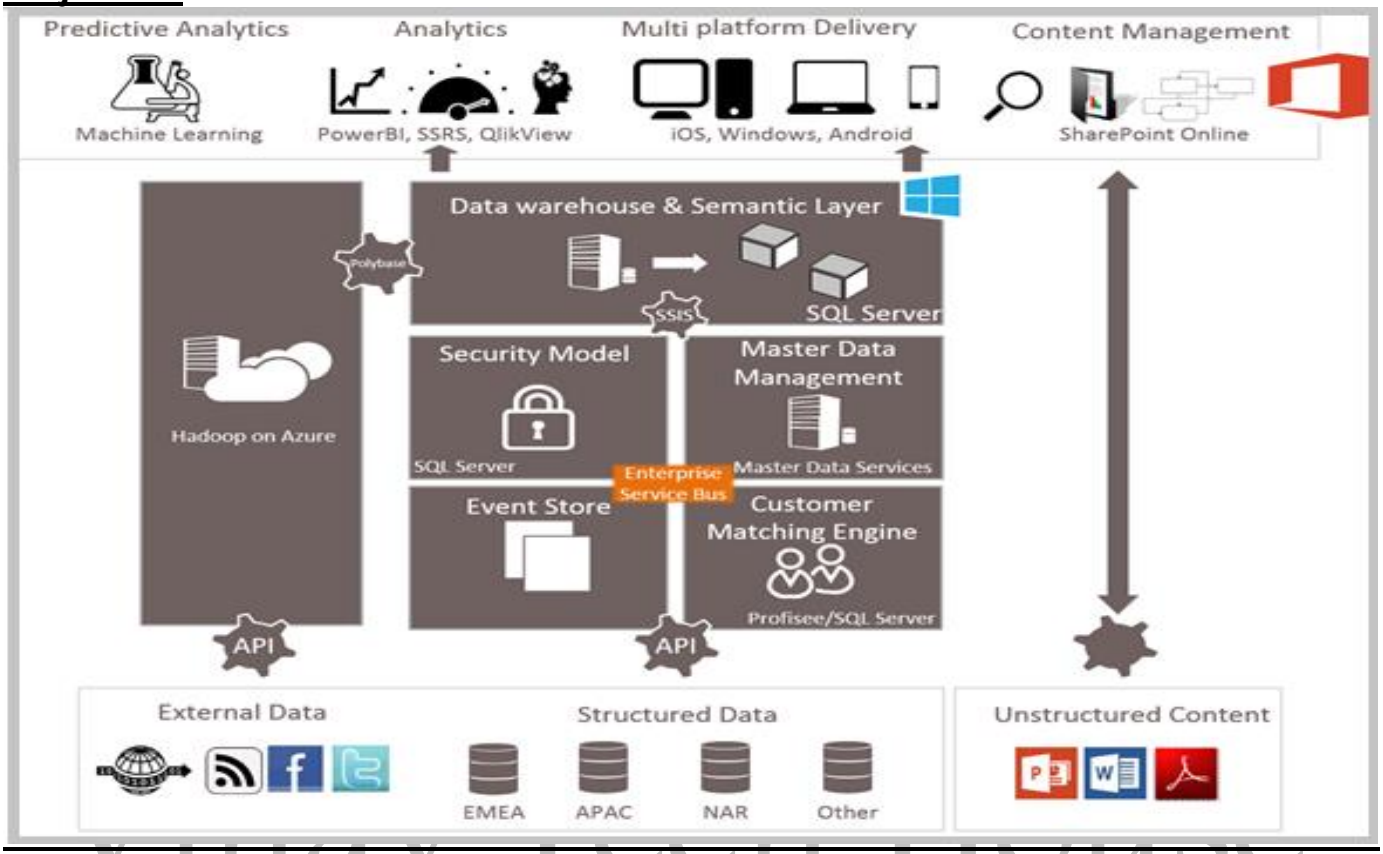
Conclusion
In conclusion: Power BI Free is quite functional, but there are limits on data refreshes, sharing, and data storage that make Power BI Pro an attractive upgrade. Power BI Premium, on the other hand, is a super-upgrade that your entire organization can use if you want to process very large datasets.

Power BI Premium provides dedicated and enhanced resources to run the Power BI service for your organization. For example:

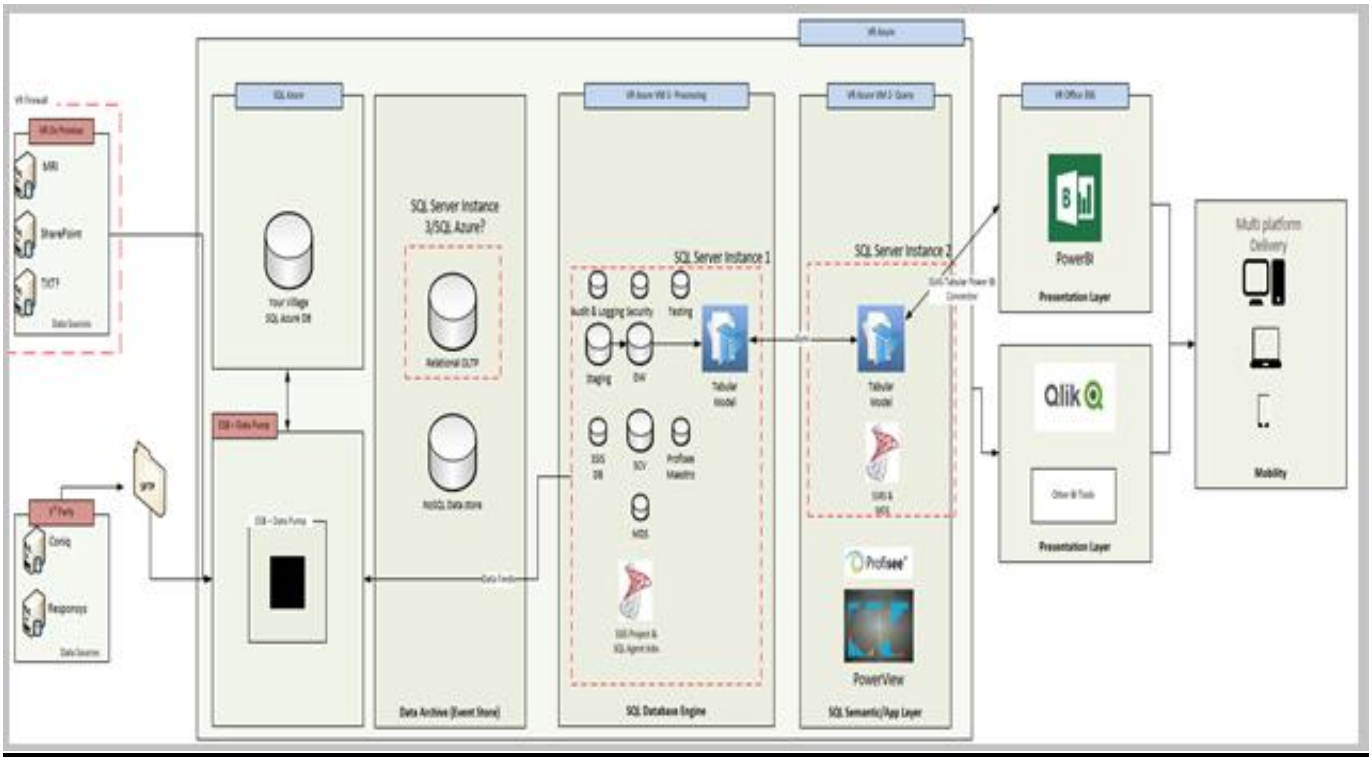
- Greater scale and performance
- Flexibility to license by capacity
- Unify self-service and enterprise BI
- Extend on-premises BI with Power BI Report Server
- Support for data residency by region (Multi-Geo)
- Share data with anyone without purchasing a per-user license

REAL TIME PROJECT FLOWS

Project #1



Project #2



Get Power BI Desktop

Power BI Desktop provides advanced query, modeling, and report creation features that enables you to build data models, create reports, and share your work by publishing to the Power BI service.

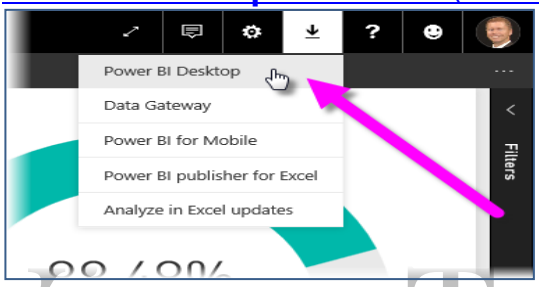
Power BI Desktop is a free download. There are two ways

1st Way) **https://powerbi.microsoft.com/en-us/desktop**]

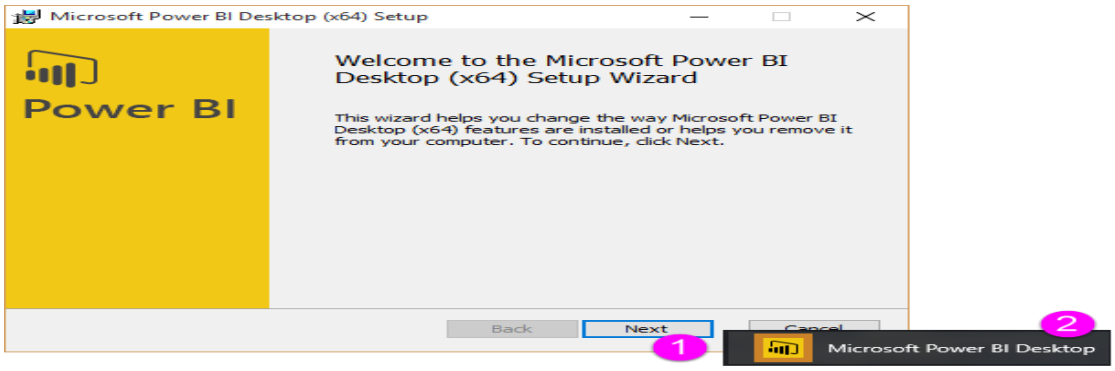
2nd Way) Download from **Power BI Service** [Follow below]

To download the most recent version of **Power BI Desktop**, you can select the download icon from the upper right corner of the Power BI service, and select **Power BI Desktop**.

Power BI Desktop downloads (both 32- and 64-bit versions).



Regardless of which way you choose to download, once **Power BI Desktop** is downloaded, you're prompted to run the installation file: **Power BI Desktop** is installed as an application, and runs on your desktop.

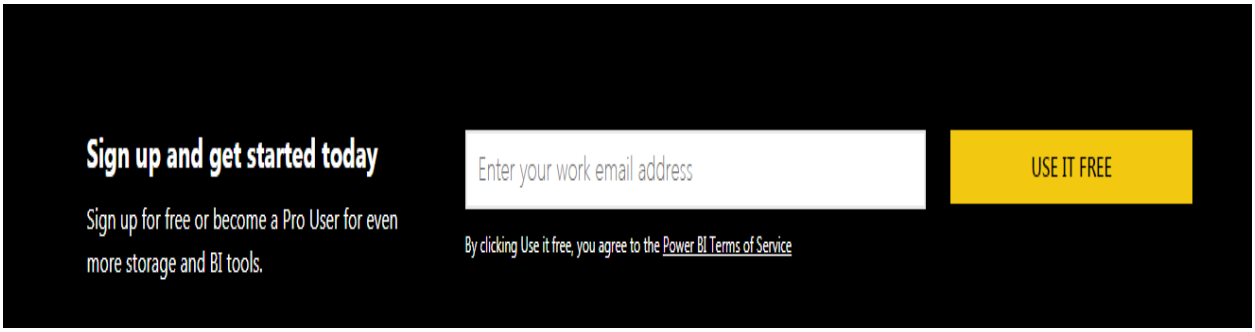


When you launch **Power BI Desktop**, a *Welcome* screen is displayed.

POWER BI ACCOUNT CREATION

1. Sign up in the below URL

   https://powerbi.microsoft.com/en-us/landing/signin/



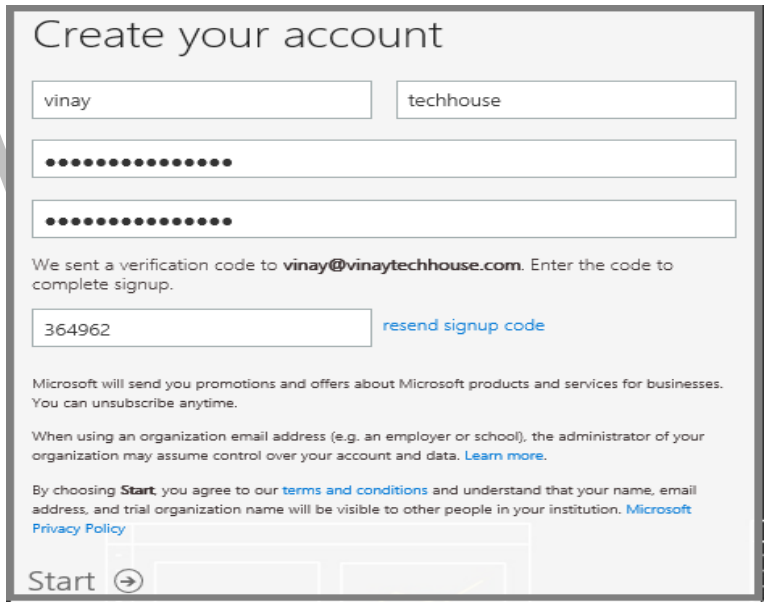
2. Enter your domain user (Ex: vinay@vinaytechhouse.com) click USE IT FREE
3. Enter the below details

   First name:

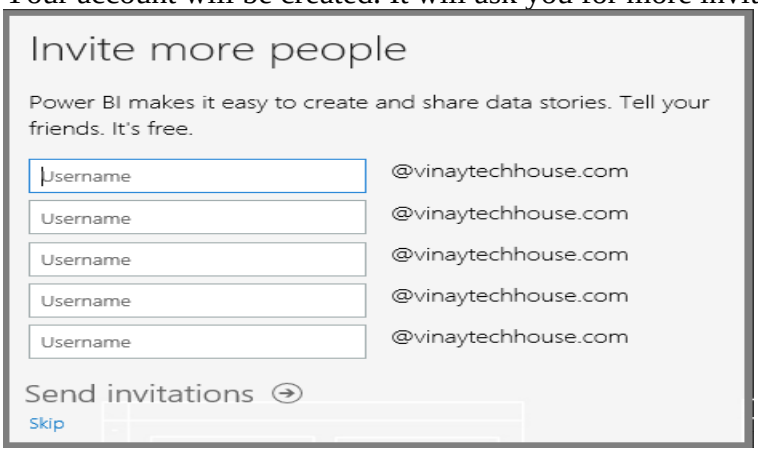
   Last Name:

   Password: Need special character, numeric and alphabets. (Ex: vinaytech@123)

   Secured Code: Enter the code send to your email id.

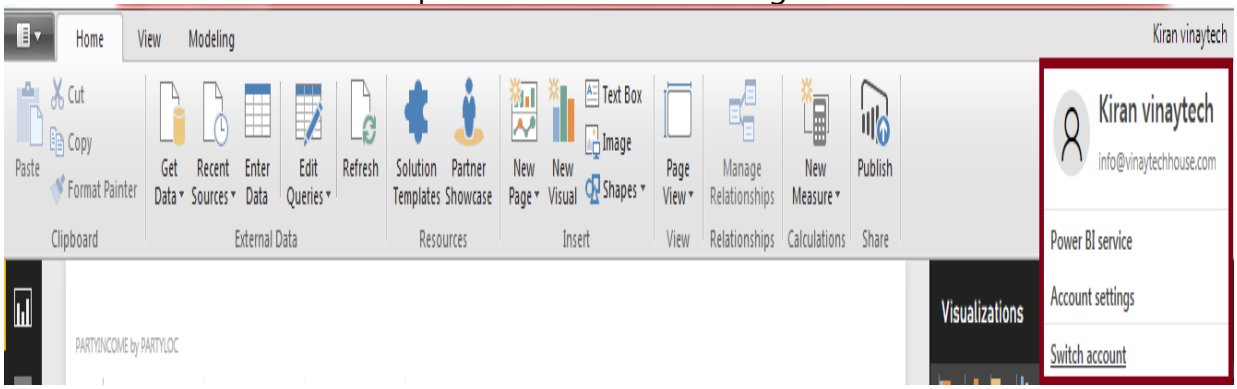


4. Your account will be created. It will ask you for more invites.



POWER BI ACCOUNT CHANGE & ALTERNATE EMAIL

1. Go to Power Bi Desktop and do the below change.



2. Use Switch account to change the account.

Using an alternate Email Address:

By default, the email address you used to sign up to Power BI with is used to send you updates about activity in Power BI.

Updating through Office 365 personal info page

1. Go to your Office 365 personal info page. If you are prompted to, sign in with the email address and password you use for Power BI.

2. Slick the edit link in the Contact details section.

Note

If you do not see an Edit link, this means your email address is managed by your Office 365 administrator and you will need to contact them to update your email address.

3.In the Alternate email field, enter the email address you would like Power BI updates to be sent to.

Note

Changing this setting will not affect what email address is used to send service updates, newsletters, and other promotional communications. Those will always be sent to the email address you originally used when registering for Power BI

Updating through Azure Active Directory

When capturing an Active Azure Directory (AAD) embed token for Power BI, you can use three different types of emails. The three different types are:

- the main email address that is associated to a user's AAD account
- the UserPrincipalName (UPN) email address

- the “other” email address array attribute

Power BI selects which email to use based on the following criteria:

1. If the mail attribute in the AAD tenant’s user object is present, then Power BI uses that mail attribute for the email address

2. If the UPN email is not a *.onmicrosoft.com domain email address (the information after the "@" symbol), then Power BI uses that mail attribute for the email address

3. If the “other” email array attribute in the AAD user object is present, then the first email in that list (since there can be a list of emails in this attribute) will be used

4. If none of the above conditions are present, then the UPN address will be used

Updating with PowerShell

You can alternatively update the alternate email address via PowerShell for Azure Active Directory. This is done with the Set-AzureADUser command.

Copy

Set-AzureADUser -ObjectId john@contoso.com -OtherMails "otheremail@somedomain.com"

Note

The feedback system for this content will be changing soon. Old comments will not be carried over. If content within a comment thread is important to you, please save a copy.

Power BI Account Creation:

a) Have an Organization account

b) Use that account in the specified link to get Power BI account.
Note: Default you would get Free account which is helpful to perform few operations, where as Pro account will help you for all sorts of operation
Username:powerbi@vinaytechhouse.com
Password: suvinkalan@1
Power BI Account Change and Alternate Email Address [56]

a) Power BI Desktop, right top corner and Switch Account
b) Updating through Office 365 personal info page
c) Updating through Azure Active Directory

Identifying a user account [Pro or Premium]

Go to workspace, if there is diamond symbol, then premium, otherwise pro.

Different Scenarios to practice {Remember the below and do}

Object	Options [Load / Edit / Direct Query / Connect Live]
Flat file	Load, Edit
Excel, XML	Load, Edit
SQL Server	Import, Direct Query
SQL Server Analysis Services	Import, Connect Live

Normal Databases	Analytical Databases
SQL Server, Oracle, DB2, Teradata	Microsoft SQL Server Analysis Services SAP Netviewer Hyperion Essbase
Less aggregates	More aggregates
No KPIs	More KPIs
No Hierarchies	Many hierarchies
Two dimensional	Two and Multi-dimensional
We use SQL to do the operations	We use MDX—Multidimensional cubes DAX—Tabular cubes
Support alternate credentials in Power BI	Do not support alternate credentials for Connect Live

How many Power BI Desktops available and what are the differences?

A)Power BI Desktop→ Cloud environment
B)Power BI Desktop→On-Premises [Report Server]

What is Power BI end-end operation?

a)Getting data from sources [single / multiple]
b) Transform data
c) Model data between sources
d) Visualize data
e)Publish data

f) Create appspace, content pack, schedule the reports
g)Create Dashboards and subscribe or share
h) Apply Security [role or row-level] for the datasets
i)Making report available for Mobiles.

Note: Paginated reports, custom applications connecting is optional

POWER BI Desktop [Differences between the available desktops?]

How many types of Power BI desktops available?

Two types

a) Cloud Desktop

b) On-Premise desktop

There are two types of Power BI Desktops

a) Cloud Desktop

- This can also be called as Normal Power BI Desktop
- It creates reports suitable for cloud [**app.powerbi.com**]
- This is in Yellow Color

b) On-Premises Desktop

- This is called as Power BI Report Server Desktop
- This will create reports suitable for On-Premises report server.
- It appears in black color

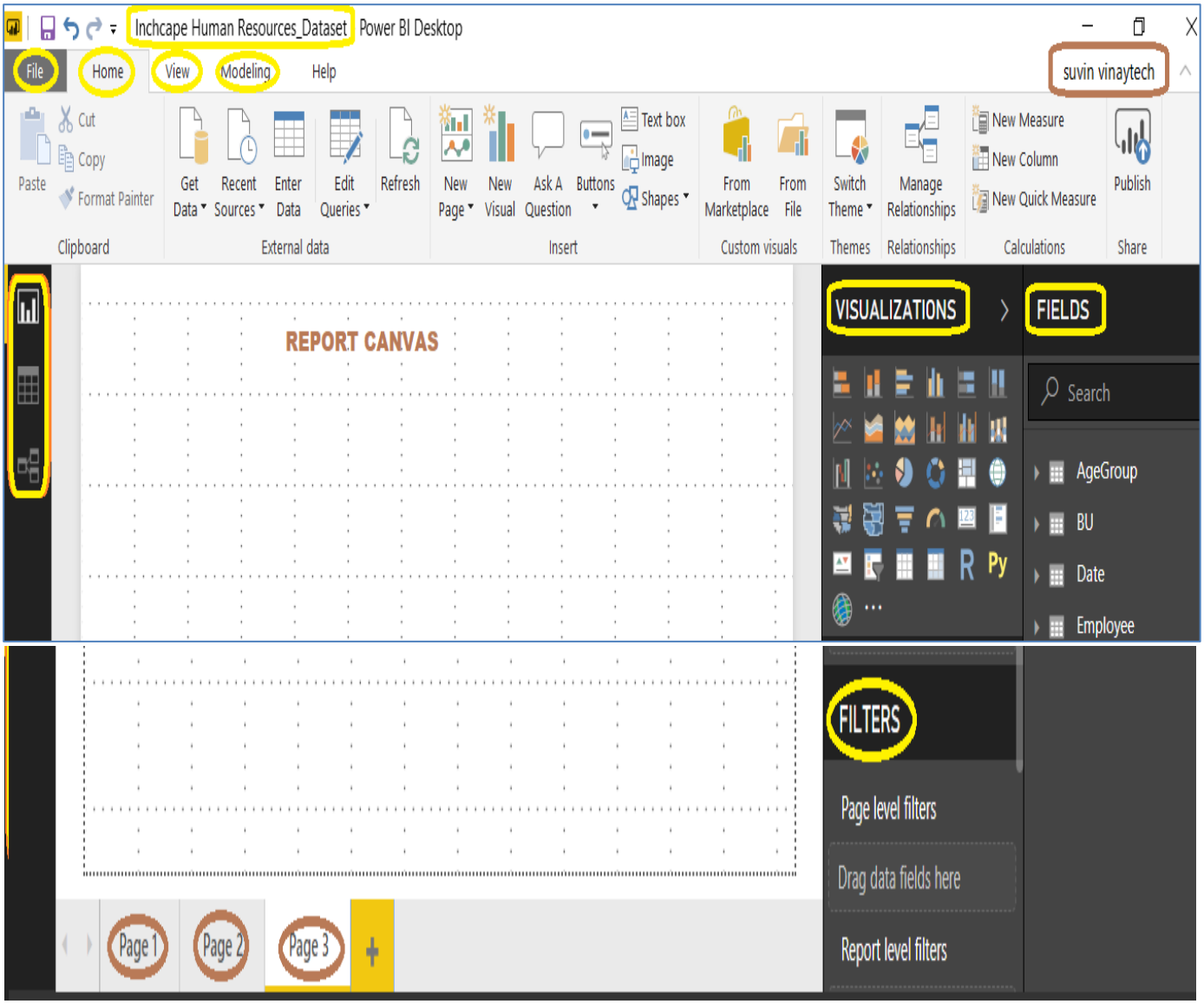
Getting Started With Power BI Desktop

a) Go to Desktop--> Click Power BI Desktop

It shows initial page with the below information

1. Get Data --Getting data into desktop
2. Recent Sources
3. Other Reports
4. Forums
5. Blogs
6. Basic Videos for understanding
7. Tutorial information

Once you click close, it will open an empty area where you find the below



a) File Menu Options:

New, Open, Save, Save As

Import [Workbook, Template, Dataset etc...], Export [Template]

Options and Settings [Many Preview features, memory settings and option settings]

b) Home Ribbon:

Data options [Get data, Data Sources etc...] and some other relevant information.

c) View Ribbon:

Viewing options

[Limited objects, Book Marks, Page view, Page Width, Phone View etc...]

d) Modeling Ribbon: Model data elements [New Measure, Column, Table etc...]

1) Desktop left hand side pane options

1. **Report View (Power View)**--> Report visuals, options and Fields.
2. **Data View**--> Data of Power BI Dataset Queries.
3. **Relationship View**--> Relationship between queries.

Power BI Dataset:

a) Data retrieved into POWERBI with columns.

b) Dataset may have fields [queries] from Files, Tables, Web and other applications.

c) A dataset contains one mode at a time [Connect Live / Import / Direct Query]

2) Desktop middle pane

Report Canvas, where we take visuals and arrange.

3) Desktop right hand side panes

1. Visualizations Pane

It has two sections

a) Fields section--> Fields used in the visual

b) Format section--> Format of the visual [colors, fonts, sizes etc...]

2. Fields Pane

Power BI Dataset and Fields [Query Fields, New columns, New Measures, Hierarchies, Groups etc...]

e) Desktop down you will find Pages, you can take multiple pages.

3.Filters Pane :

Recently added as a pane, earlier it was with visual.

Visualization Pane:

1. It has many visualizations and allows you for custom visualization adding.
2. You can use R-Script / Python to construct own visual for statistical analysis.
3. Major types of visuals are

Single value display visual

Card

KPI

Multi Value display

Tables

Matrix

MultiRowCard

Multi value display with comparisons

Charts [Stacked Column, Bar, 100% Stacked column & bar, Clustered Column and Bar]

Line chart

Mixed Charts [Line and Clustered Chart]

Tree Map

Geographical information display

Map, Filled Map

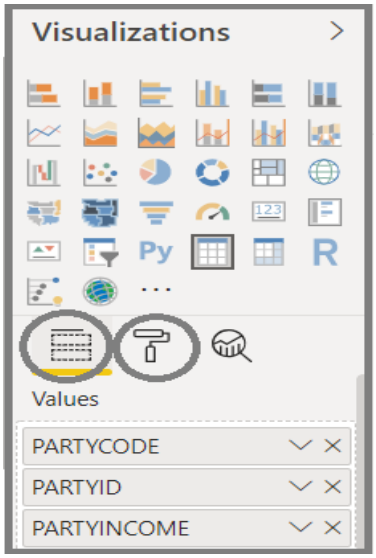
Custom visual

Market Place

A Custom file

R-Script / Python visuals

Writing R-Code



Visuals Fields Section

It has two parts

a) Fields arrangement b) Fields Filtering

a)Fields arrangement

Usually, it has multiple field value area

a) Value: Textual column, Measurable column

b) Axis

c) Legend: Show the categories in Axis or Columns

d) Column

e) Labels

f) Tooltips

Format Section:

a) General

b) Position (X, Y etc...)

c) Colors

c) Font

d) Background color

e) Borders

f) Lock Aspect

g) Tooltip

h) Visual Header

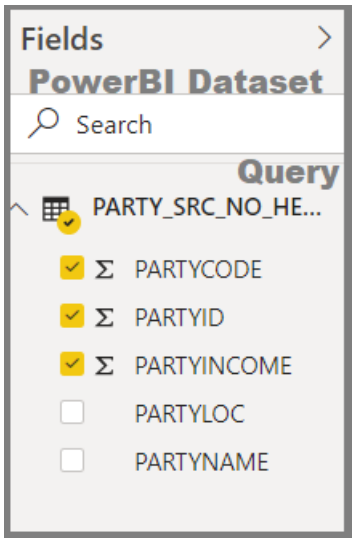
b) Filtering Fields [How many types of filters available in Power BI?]

a) Visual filter: Respective visual filtered based on condition [Basic condition and advanced condition]

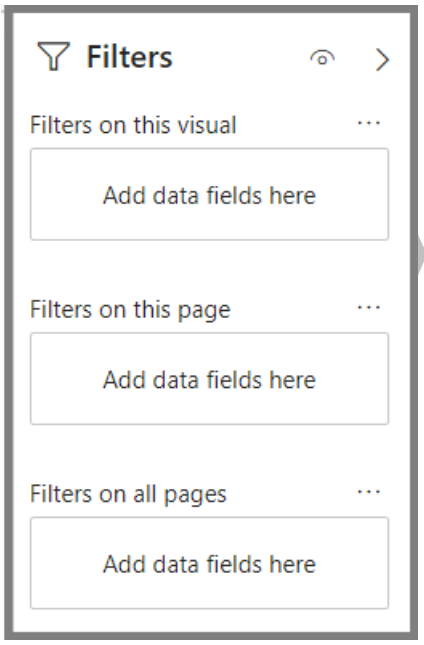
b) Page Filter: All visuals in the page are filtered based on condition

c) Report Filter: All pages in the report are filtered

d) Drill through filter: Filter the data in another page based on action in one page



Filters Pane:



There are three types of filters

a) **Visual Filter:** Respective visual filtered
b) **Page Filter:** All visuals in the page are filtered
c) **Report Filter:** All pages are filtered.

Note: One more filter available, i.e. Drill through filter.

Drill through filter:

Filters the report one visual with another visual.

It is again two types

a) Within the report drill through {between one visual to other visual]
b) Between multiple reports {one report to other report}

Differences between Load, Import, Direct Query Mode, and Connect Live?

What is mode?

The way you connect to application and get data is called as mode.

How many modes does Power BI Support?

Three modes a) Import /Load b) Direct Query c) Connect Live

Differences between Direct query and Import Mode?

1) Import mode:

a) The selected **tables and columns are imported** into Power BI Desktop.

b) As you create or interact with a visualization, Power BI Desktop uses the imported data.

c) You **must refresh the data**, which imports the full data set again, to see any changes that occurred to the underlying data since the initial import or the most recent refresh.

d) Import possible for **most of the sources**

e) Import available for **analysis services tabular model**.

Note: Simply Direct Data Load, Modelling and Reporting of data possible. More than 1 GB data it will not allow/ decrease performance. Not more than 8 refreshments in pro and 48 refreshments in premium.

2)DirectQuery

a) No data is imported or copied into Power BI Desktop. For relational sources, the selected tables and columns appear in the Fields list. For multi-dimensional sources like SAP Business Warehouse, the dimensions and measures of the selected cube appear in the Fields list.

b) As you create or interact with visualization, Power BI Desktop queries the underlying data source, which means you're always viewing current data.

c) Many data modeling and data transformations are available when using DirectQuery, though with some limitations.

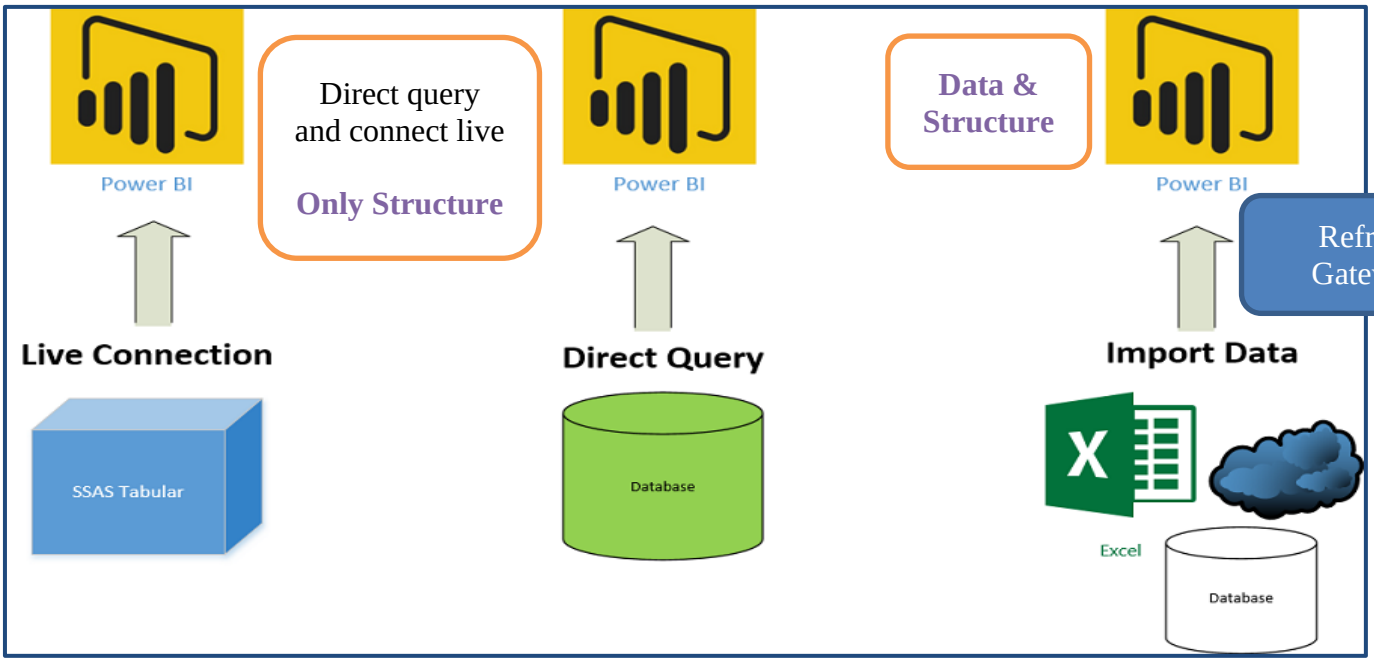
d) When creating or interacting with a visualization, the underlying source must be queried and the time necessary to refresh the visualization is dependent on the performance of the underlying data source. When the data necessary to service the request has recently been requested, Power BI Desktop uses recent data to reduce the time required to display the visualization. Selecting Refresh from the Home ribbon will ensure all visualizations are refreshed with current data.

d) Direct Query possible for few sources

e) Direct query not available for analysis services tabular model, rather Connect Live available.

c) Connect Live

This is available for Analysis Services and works like Direct Query.



IN CASE OF DIRECT QUERY:

User Calls the report-→ Hits the actual database and Gets the data.

Refresh mechanism not required because always it gets fresh data.

When you are working with **more volumes of data**, this is recommended.

IN CASE OF CONNECT LIVE:

User Calls the report-→ Hits the actual cube database and gets the data.

Refresh mechanism not required because always it gets fresh data.
As cubes contain **more volumes of data**, this is required.

IN CASE OF IMPORT MODE:

User Calls the report-→ Hits the Power BI Dataset [in-memory] and gets the data.

Refresh mechanism is applicable if source changes.
If the **data volume is less** and you need faster operations and reporting, this is suitable.

What are the sources direct query support?

Few sources it will support.

- Amazon Redshift
- Azure HDInsight Spark (Beta)
- Azure SQL Database
- Azure SQL Data Warehouse
- Google BigQuery (Beta)
- IBM Netezza (Beta)
- Impala (version 2.x)
- Oracle Database (version 12 and above)
- SAP Business Warehouse Application Server
- SAP Business Warehouse Message Server (Beta)
- SAP HANA
- Snowflake
- Spark (Beta) (version 0.9 and above)
- SQL Server
- Teradata Database
- Vertica (Beta)

What kind of authentication required when we work with direct query?

DirectQuery queries to SQL Server require authentication using current Windows authentication credentials or database credentials to establish access.

Alternate credentials are not supported

What are the benefits of using Direct Query?

There are a few benefits to using **DirectQuery**:

- **DirectQuery** lets you build visualizations over very large datasets, where it otherwise would be unfeasible to first import all of the data with pre-aggregation
- Underlying data changes can require a refresh of data, and for some reports, the need to display current data can require large data transfers, making re-importing data unfeasible. By contrast, **DirectQuery** reports always use current data
- The 1 GB dataset limitation does *not* apply to **DirectQuery**

What are the limitations you have in DirectQuery?

There are currently a few limitations to using **DirectQuery**:

- All tables must come from a single database
- If the **Query Editor** query is overly complex, an error will occur. To remedy the error you must either delete the problematic step in **Query Editor**, or *Import* the data instead of using **DirectQuery**. For multi-dimensional sources like SAP Business Warehouse, there is no **Query Editor**
- Relationship filtering is limited to a single direction, rather than both directions (though it is possible to enable cross filtering in both directions for **DirectQuery** as a Preview feature). For multi-dimensional sources like SAP Business Warehouse, there are no relationships defined in the model
- Time intelligence capabilities are not available in **DirectQuery**. For example, special treatment of date columns (year, quarter, month, day, so on) are not supported in **DirectQuery** mode.

  Ex: You can't apply year /month/ day calculations on year, month and day columns. Means

  It will treat those columns as normal textual columns.

- By default, limitations are placed on DAX expressions allowed in measures;
- There is a 1 million row limit for returning data when using **DirectQuery**. This does not affect aggregations or calculations used to create the dataset returned using **DirectQuery**, only the rows returned.

For example, you can aggregate 10 million rows with your query that runs on the data source, and accurately return the results of that aggregation to Power BI using **DirectQuery** as long as the data returned to Power BI is less than 1 million rows. If more than 1 million rows would be returned from **DirectQuery**, Power BI returns an error.

Q: Differences between Load, Import, Direct Query, and Connect Live?

Load	Import	Direct Query	Connect Live
Structure and Data	Data and structure come to Power BI Desktop (in-memory)	Structure comes from databases	Structure comes from Analysis Services
	Data limitation [1GB] :Less Data	NA [More Data]	NA [More Data]
	Data refresh required [manual or scheduled [either 8 / 48]	Not required [always hit]	Not required [always hit]
Files	More sources [excel, file etc…]	Databases	Analysis Services databases
Report view, Data view, Model view available	Report View, Data View, and Model View available	Report View and Model View [No Data view]	Mostly Report View [As SSAS has in built model]
Refresh required	Report queries your Power BI dataset	Report Queries your actual data source	Report queries your actual data source
	Import for SSAS tabular model possible	Direct query for SSAS tabular not possible	Connective live possible
	Over medium sized datasets with pre-aggregations	Over large datasets to show current data	
	Single and both directions possible	Mostly the relationship is single direction [both direction has limitation]	
	Full support to Time Intelligence capabilities. It treats date table columns as date columns	Time intelligence capabilities not available. It will treat date table columns as normal.	
Full	Full modeling and transformations	Limited modeling and transformations	
1 GB data	1GB data limit applied	Number of rows it can return is 1 million [it can work with more than 1 million for aggregates]	

FAQS

Power BI Desktop download links?

1st Way) https://powerbi.microsoft.com/en-us/desktop]

2nd Way) Download from Power BI Service [Follow below]

Power BI Account Creation Link?

https://powerbi.microsoft.com/en-us/landing/signin/

What is Power BI Service?

It is cloud service used for reports and dashboards better management

Accessed using the URL [app.powerbi.com]

How many types of accounts we have?

We have three types of accounts

a) Free b) Pro c) Premium [P1, p2, P3] a) Free account:

You can create report in Power BI Desktop, you can publish, but you can not manage reports.

b) Pro account: [less reports, less storage]

1 User, 10 GB Storage, $10 / Month

user name: vinaytech_1@vinaytechhouse.com

password: vinaytech@2014

c) Premium account: [more users, more reports, more storage]

Capacity Pricing account

It is again of 3 types

a) Premium: p1

TBs data store, 8 Core System, 25 GB RAM, Multi user support, $5000 / month

b) Premium: p2

TBs data store, 16 Core System, 50 GB RAM, Multi user support, $10000 / month

c) Premium: p3

TBs data store, 32 Core System, 100 GB RAM, Multi user support, $20000 / month

What type of account your company using currently?

My organization using 7 Pro accounts, 2 P1 accounts, one P2 account.

Note: 1 P1 and 5 Pro (one organization)

What is mode?

The way you connect to application and get data is called as mode.

How many modes does Power BI Support?

Three modes a) Import /Load b) Direct Query c) Connect Live

How many views we have in Power BI?

a) Report View b) Data View c) Model View

What is the first page in Power BI Desktop?

Get Started Page

How do we get data or structure or both into Power BI Desktop?

Get Data

How many types of Power BI Desktops available?

There are two types of Power BI Desktops

a) Cloud Desktop

This can also be called as Normal Power BI Desktop
It creates reports suitable for cloud [app.powerbi.com]
This is in Yellow Color

b) On-Premises Desktop

https://docs.microsoft.com/en-us/power-bi/report-server/install-powerbi-desktop

This is called as Power BI Report Server Desktop
This will create reports suitable for On-Premises report server.
It appears in black color

What is Refresh?

Once data imported from sources to Power BI, refresh mechanism is required to take source data changes into Power BI.

There are two types of refresh and we do in two ways

a) Full refresh [complete source data refresh]

b) Incremental Refresh [only recently added data refresh / required data refresh]

Note: Gateway is required to refresh Power BI reports with On-Premise sources.

How many Refreshing methods we have?

a) Manual / ad-hoc refresh

b) Scheduled refresh

Which objects require refresh in Power BI?

Two objects require refresh a) Power BI Dataset b) Power BI Data Flow

Differences between Import, Direct Query, and Connect Live?

Refer to the table given [above]

Additional Real-Time Questions:

Questions:

a. Benefit to using gateway vs importing to cloud? Vice-versa?
b. How to determine model size? Using gateway, our model is very small (10k) and SSAS cube db is large (5GB). If we upload the data/database, does model size increase to accommodate cloud data usage?
c. How is storage handled? Pro user grants 1GB model, and 10GB storage/user. PPU grants 100GB model, 100TB storage. Do we need to worry about model size if using gateway to access the db?
d. Does database size (5GB vs 50GB vs 500GB db) determine node type/size? On-prem vs Cloud
e. Would a PremiumPerUser license require an A4/P1 node for embedded (premium capacity)?
f. How to determine node requirements/scaling?
g. How do external users subscribe to reports if they don't have defined users (using embedded)? Is Premium capacity (or premium per-person) required?
h. Can a user share a report/dashboard by email to external users (no account) using embedded?