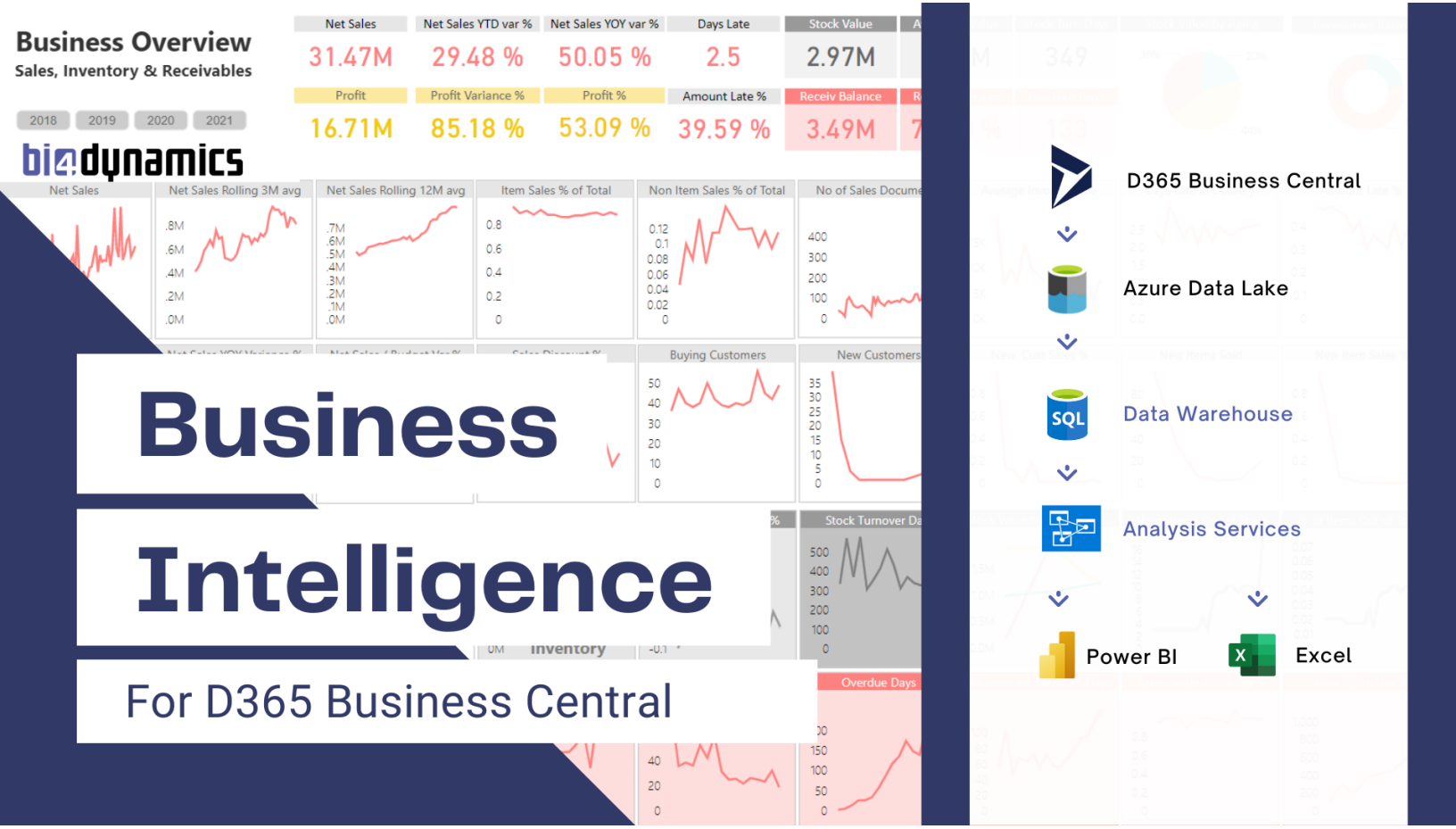


Data transformation from D365 BC to Power BI

This document shows the data transformation with Data Lake Architecture of BI4Dynamics's D365 Business Central. The transformation is done automatically in 3 subsections/steps:

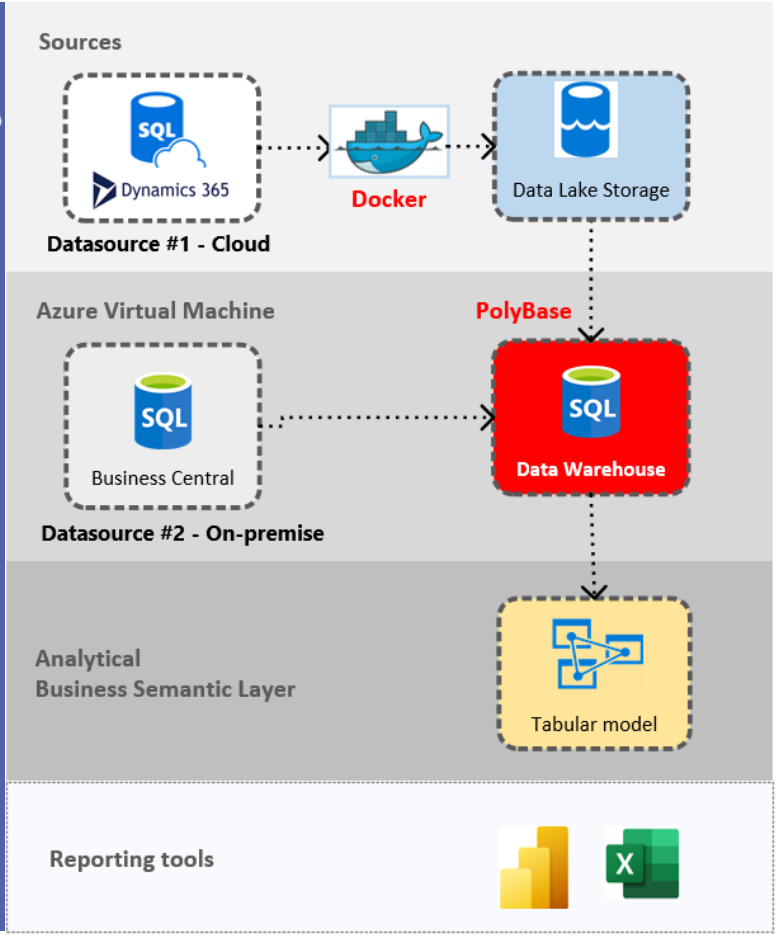
1. **Preparation**: Export BC tables to the Data lake and insert them into Data Warehouse.
2. **Transformation**: Data Warehouse Automation with best-in-class content.
3. **Consumption**: Analyze data with visualization tools, such as Power BI and Excel.

This unique data transformation that with BI4Dynamics's Docker copies BC to **Data Lake** ensures first-in-class business intelligence from D365 BC. BI4Dynamics automated process builds **Data Warehouse**, and **Analysis Services** ensure powerful analysis on the document level **without sacrificing** the **speed** of data processing and **querying** in **less than a week.**

The result of the BI4Dynamics application is the best-in-class Power BI and Excel dashboards that bring insightful information with drag and drop Business Intelligence experience.

PREPARATION

BI4Dynamics D365 Data Lake Architecture



Preparation

Exposing BC tables as web services

D365BC database is not directly accessible so we need to install the BI4Dynamics extension that automatically:

- Reads BC metadata that BI4Dynamics will use for customizations.
- Creates queries, one query for each exported BC table.
- Exposes queries as web services.

A standard BI4Dynamics extension exports 150 tables, any other custom tables are added automatically.

Exporting BC tables to Data Lake

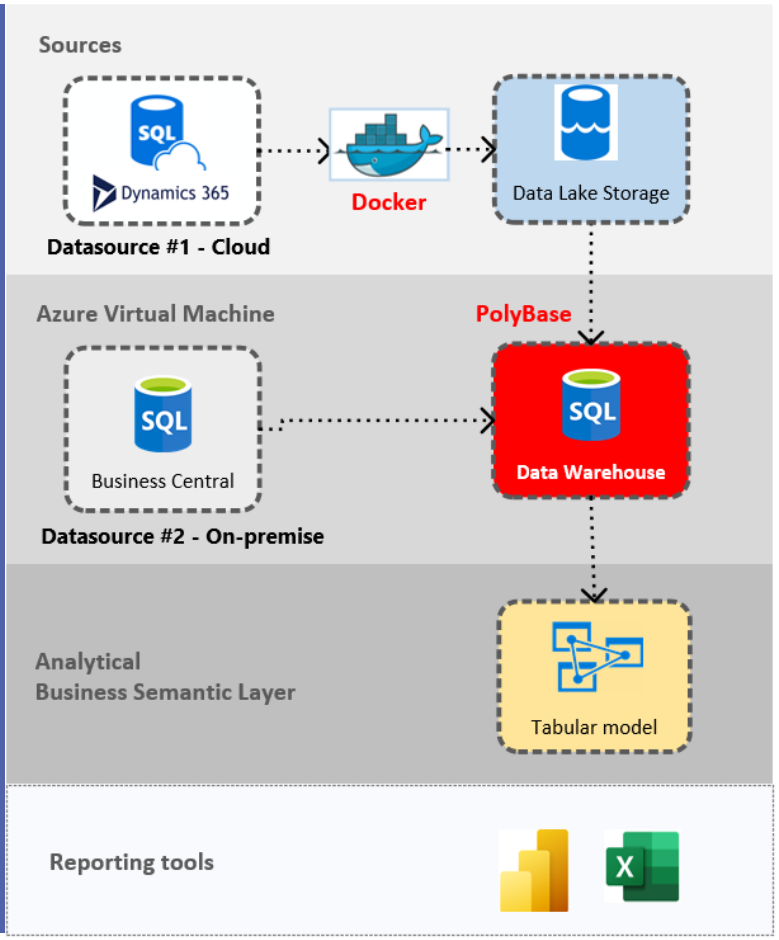
BI4Dynamics creates a Docker, a specialized Virtual Machine, that incrementally exports tables as CSV files to Azure Data Lake. The refresh time can be scheduled. Export to Lake operation is not affecting the BC production process.

Azure Data Lake to BI4Dynamics Data Warehouse

CSV files are loaded to DW using the standard SQL feature PolyBase.

BI4Dynamics D365 Data Lake Architecture

TRANSFORMATION



Transformation

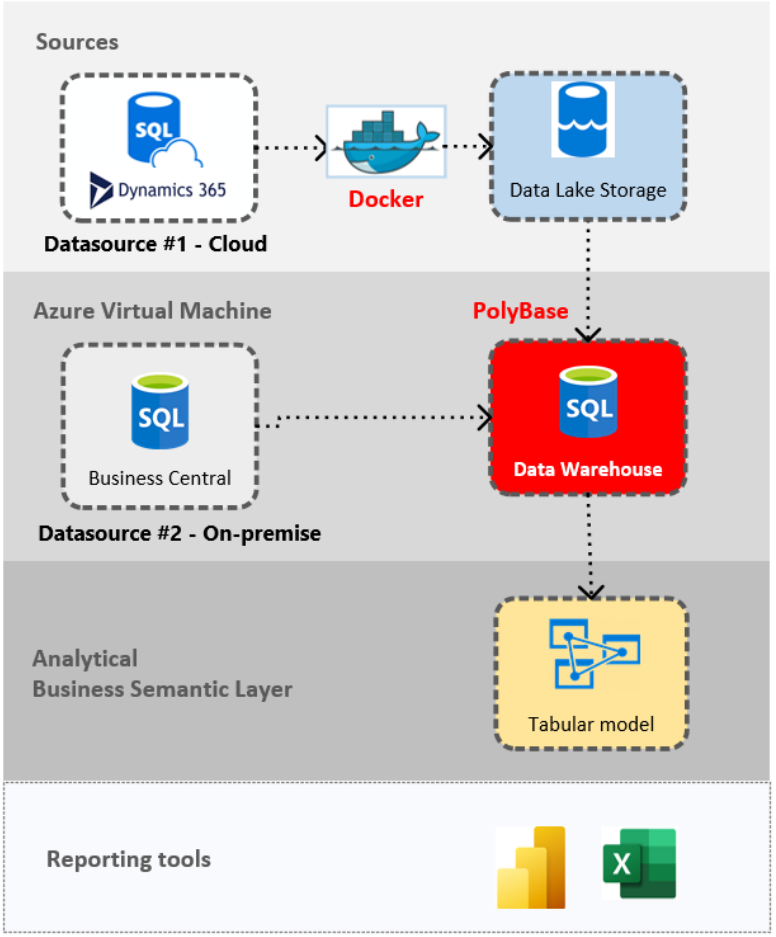
Data Transformation is the process where BI4Dynamics takes the raw copy of tables that landed in the BI4Dynamics staging area and transforms it using SQL objects (stored procedures, views, dimensions, facts).

The **SQL engine** is super scalable and can quickly process terabytes of data. SQL engine can support any model. SQL code generated in this data warehouse automation transformation process is fully automated.

There is **no need for specific SQL knowledge**. All customizations are wizard-driven and require only BC knowledge.

BI4Dynamics D365 Data Lake Architecture

CONSUMPTION



Semantic Layer – Excel, Power BI, or another tool

Data Warehouse data are pushed to the Tabular database for a **better user experience**. Users will connect with **Excel**, **Power BI**, or **any other tool**, where also permissions are set.

The tabular database can be implemented on:

- On-Premises using existing hardware.
- Azure Analysis Services, hosted by Microsoft, paid per service, not per user.
- Power BI Premium Capacity – paid per user, not per server.

The business intelligence content is the same in all cases. We will **help you choose the right environment** by taking into consideration database size, the number of users, geographic usage, self-service needs of advanced users, needs for sending reports to users' emails, and other factors.

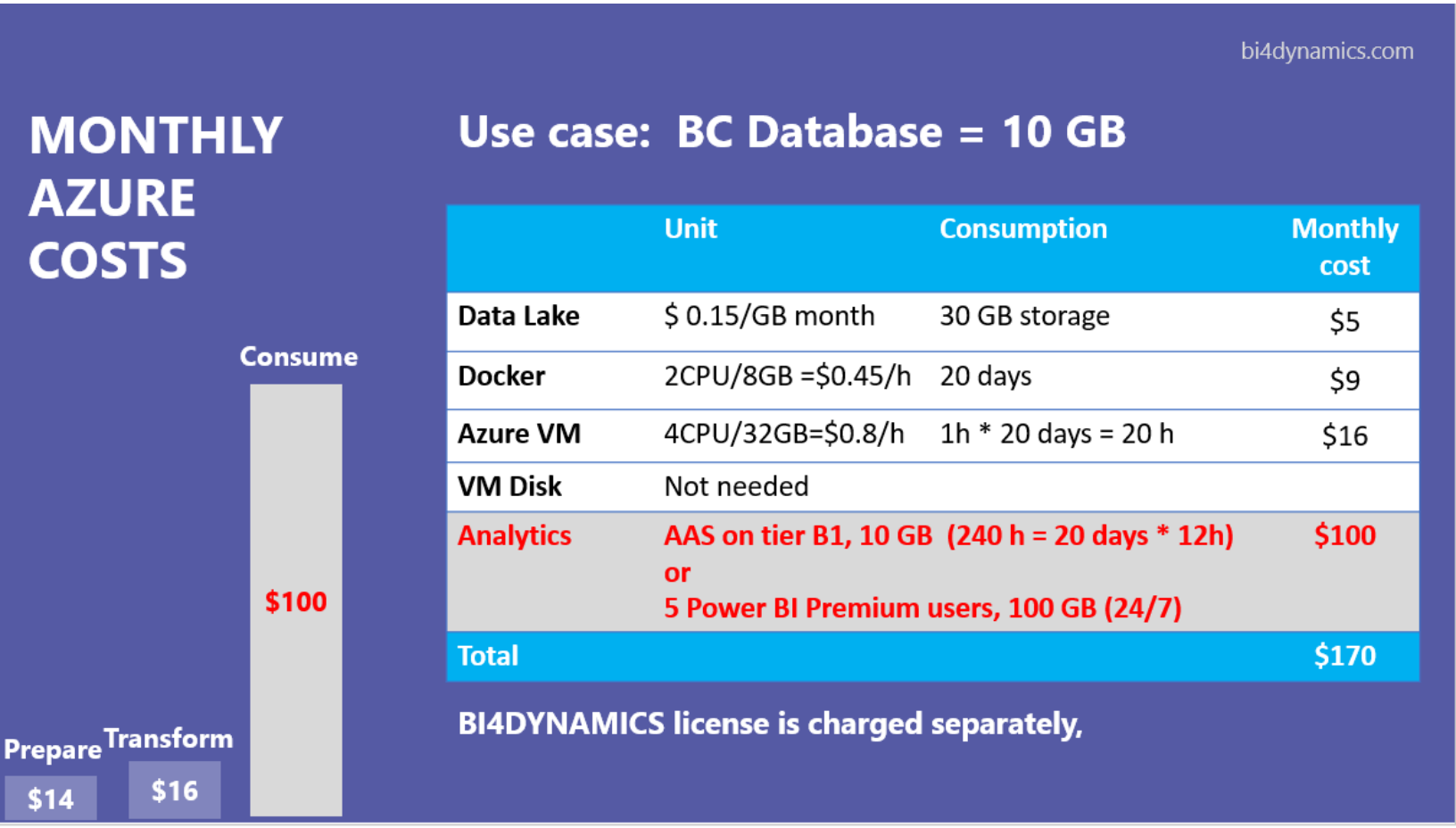
All of this gives you **control** over the cost and features without requiring you to compromise content over services. Moreover, you can always go to the document level, you don't have to do service on aggregations and the data size can start with **Giga** or even **Terabytes**. The SQL will crunch **any data** and the semantic layer will aggregate this data.

Feature [3]	Power BI Pro	Power BI Premium Per user	Power BI Premium Per capacity
Collaboration and analytics			
Mobile app access	●	●	●
Publish reports to share and collaborate	●	●	
Paginated (RDL) reports		●	●
Consume content without a per-user license			●
On-premises reporting with Power BI Report Server			●
Data prep, modeling, and visualization			
Model size limit	1 GB	100 GB	400 GB
Refresh rate	8/day	48/day	48/day
Connect to more than 100 data sources	●	●	●
Create reports and visualizations with Power BI Desktop[4]	●	●	●
Embed APIs and controls	●	●	●
AI visuals	●	●	●
Advanced AI (text analytics, image detection, automated machine learning)		●	●
XMLA endpoint read/write connectivity		●	●

Difference between Power BI Pro & Premium

The table above shows that Power BI Pro and Power BI Premium have **similar** features however, the key difference is the **size** of the Data Modelling, in Power BI **Pro** maximum size is **1GB** and in Power BI **Premium** is **100 GB**, while the **refresh** in **Pro** is 8 times/per day and in **Premium** is 48 times/per day.

For BI4Dynamics is very important that we can publish the tabular model or **XMLA endpoint read/write connectivity** in Power Bi Premium. We can also work with paginated reports which means we can create a report builder and send it to anyone even if it is not a Power BI Pro or Premium user through Outlook application. Hence, this makes the difference between **10$**/per user/per month for **Pro** and **20$**/per user/per month for **Premium**.



Monthly Microsoft Azure Costs

The table above shows the monthly Azure costs of Microsoft and these costs are not connected with the BI4Dynamics, the costs for BI4Dynamics depend on different parameters.

The table shows an example of database size of **10GB**, and the Azure costs in each step of our Data Transformation with Data Lake Architecture:

- **Preparation** segment does not have a huge impact on the monthly total costs, since, **Data Lake** costs 5$ per month, and the **Docker** costs 9$ per month. This sums up to a total of **14$ per month**.
- Azure VM with 4 core and 32GB of memory costs **0,8$**/per hour. For eg. if you run it **1**/hours per day and **20 days**/per month it comes to a total of **20h** and will cost **16$**. If you need a better in performance (8CPU/64GB) Azure VM it will cost **40$** approx.
- However, the costs of **Consumption** are the ones that have the biggest impact on the total monthly costs. Analysis Services on Tier B1 with **10GB** of Disk space for 240h hours (20 days *12 hours) =**100$**). The same costs would be for **5** users of Power BI Premium, 720h or 24/7 for a 100GB data model.

In such a scenario the total monthly cost for Azure infrastructure would be approx. **170$**

Conclusion

The elaboration of all three phases above shows that the most important choices for a new BI4Dynamics BC user are in the **Consumption** section. Regardless, this does not mean that the **Preparation** and **Transformation** sections are not of vital importance, but in these two sections the choices are already made by BI4Dynamics, and we chose the best performing tools for the execution of both sections.

In the **Consumption** section as we already described there are 3 options between whom the user can choose from and this choice should be made based on the specifications that its company has. The options and the conditions for making a choice are the following:

- **On-Premises** → Best option when the company has **hardware** available. The drawbacks are that this option has only **Local Access** and for a user to connect to the data when not present in the company, this user must use **Remote Desktop Connection**. Also, companies who want mobile and web access must pay an additional 10$ per user for Power BI Pro.
- **Azure Analysis Services** → The advantage of this option is the fact that is on the cloud, hence, it is accessible from any device and anywhere. Moreover, to **save money** with this option you can switch it off when you are not using it (use it 8h per day only). However, this need/idea for saving money originates from the high cost this option can produce. Since it is **paid per service** it can be expensive for larger databases. On the contrary, for databases up to 20 GB, it can be much more affordable. Moreover, same as the 1st option for companies who would like mobile and web access must pay an additional 10$ per user for Power BI Pro.
- **Power BI Premium** → This option has the biggest ratio between its advantages and drawbacks. Since it is **paid per user**, the server is available and can be used **24/7**. Also, for databases up to 100 GB has high performance (compared to AAS). When it comes to the number of users it is the most affordable option for companies that have up to **20 users** (compared to AAS). On the contrary to the 1st and 2nd option, in this option, the company **does not** need to pay 10$ for mobile and web access, since Power BI Pro is **included** in Power BI Premium per user for **20$ per month**. On the other hand, the drawback is that under certain specifications it can be the most expensive option, but if the company is valuing more the performance of the solution and it has no budget constraints, then **Power BI Premium** is the best option available.

For a table visualization of the advantages please see ”Table 1.1” on the last page of this document.

Table 1.1

Hosting Environment	Advantages:	Disadvantages:
On-Premise	• Good option if you have existing Hardware available.	• Only Local Access available • For mobile and web access, an additional cost of 10$/per user/per month will appear for Power BI Pro services.
Azure Analysis Services	• When not used, can be switched off. With this, savings can be obtained. • Azure connection to the analysis database available – the data is accessible from anywhere. • Affordable for databases up to 20 GB.	• Paid per service (not per user). • Can be expensive for larger databases. • For mobile and web access, an additional cost of 10$/per user/per month will appear for Power BI Pro services.
Power BI Premium	• Pay per **user** (not per server). • Server is available 24/7. • Very good performance for big databases (up to 100 GB). • Most affordable option for companies that have up to 20 users (compared to AAS). • Best performing option. (if there are no budget constraints). • Ideal for companies that require **mobile** and **web** access. (Power BI Pro is included into the Power BI Premium per user for 20$ per month).	• In same cases can be the most expensive option.

After reading this document and reviewing the video "D365 BC Architecture with Data Lake" you still have doubts and you are not sure which option is the most suitable for your company, do not worry!

We will be happy to assist you in the choice procedure, advice you and with this eliminate your doubts and leave you solely with confidence for the choice you are about to make.

BI4Dynamics Value Proposition

We are truly excited about this Data Lake enablement by Microsoft for BC customers as well as Power BI Pro and Premium. With these two technologies from Microsoft coupled with BI4Dynamics, we believe that we have **solved the reporting, analytics challenge faced by BC clients.**

BI4Dynamics provides an absolutely phenomenal value proposition based on our 15 + years of experience in this space. Where can one get **150+ Out of the box "Best in Class" Power BI dashboards and Excel** reports with almost **every dimension and measure that can allow clients like you to expend the analytics in any dimension.**

For a limited time, **we are offering a complete onboarding experience free of charge.**
No obligations. We understand that you need access to your data now, and not months from now.

1. **Introduction demo**

Get a sense of how standardized solutions can lower your risk of implementation and bring BI to your organization in a matter of days, not months. BI4Dynamics introduction demo is always tailored to your unique requirements and business processes.

2. **Free trial installation**

The very next they after installation you will have access to your Data Warehouse with more than a million rows of code, OLAP Cubes, or a Tabular model with 2.000 BI fields that are ready to be accessed.

3. **Power BI and Excel dashboards**

BI4Dynamics out-of-the-box offering includes more than 150 Power BI Dashboards for web and mobile usage and Excel reports that cover all standard application areas (Sales, Receivables, Finance, Inventory, Purchase, Payables) and Retail. The selection of predefined reports is listed in our ebook.
To see all dashboards in action go to our Power BI Account and use the following credentials:
Username: demo@bi4dynamics.com | Password: **PBIweL0Ve**

4. **Walk-trough data**

The session guided by a senior BI consultant, will **give you in-dept information about your business.** and **help you find unexpected events and trends** in your business.

Contact our team at sales@bi4dynamics.com or **request a demo**.