

Integrating SAP ERP with Microsoft Azure for Real-Time Analytics and Reporting

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Abstract- The following research project has signified integrating SAP ERP with Microsoft Azure to observe real-time analytics and reporting. It has served to be fruitful in providing productive solutions for the enhancement of data quality with accessibility and scalability. The combination of **Azure Data Factory with Azure Synapse Analytics** and Power BI has advanced the process of analytics and visualisation. It has mitigated the challenges faced by traditional analytics such as scalability, performance, advanced tools and integrating with Furthermore. modern technologies. the importance of data security and management during the integration process has been intricately discussed.

Keywords - SAP ERP, Real-Time Analytics, Microsoft Azure, Integration, Power BI, Data Security

I. INTRODUCTION

The research project will discuss the integration of SAP ERP with Microsoft Azure for analysing realtime analytics and reporting. It will be done by combining SAP ERP data with other data from their different lines of business. This will result in bringing Azure Synapse along with Microsoft Power BI which will help to determine end-to-end supply chain intelligence. As a result, this will stand to be responsible for analysing financial analytics and even more. On the other hand, this research project will also resonate on strengthening SAP ERP with the powerful analytics potentials of Microsoft Azure¹. Therefore, this will shed its light on data visualisation by amalgamating with Power BI for real-time analytics thereby driving business intelligence across several segments.



Figure 1: Portraying SAP and Microsoft Azure

II. Stating the overview of Real-Time Analytics in Business

This section describes Real-Time Analytics also abbreviated as "RTA" which is defined as the systematic process which uses logic and mathematics for analysing the generated data. It supports businesses with valuable insights to cultivate justified decisions swiftly. At the same time, it is also used in several industries such as finance along with eCommerce, gaming and logistics. However, the main purpose of real-time analytics is to prepare and measure the data as soon as it enters the database. This benefits the users to draw effective conclusions instantly and caters the businesses to react without delay². However, the significance of RTA depends on the enhancement of operational efficiency followed by the development of customer satisfaction and increasing competitive advantage "CA".

Highlighting the Challenges in Traditional Analytics

Traditional analytics sometimes faces challenges which need to be addressed and identified at the initial stages. The first challenge refers to scalability under



which traditional analytics might struggle to scale when managing large amounts of data. The second challenge faced by traditional analytics which cannot be ignored refers to performance while dealing with different data types and speeds. The third challenge states that traditional analytics lags with advanced tools such as machine learning³. Integrating with modern technologies sometimes becomes problematic for traditional analytics which is observed as the fourth challenge. These challenges need to be chalked out at the initial phases and mitigated to maintain the reliability and viability of the process.



Figure 2: Customers favouring for Microsoft Azure

III. Describing the approaches taken for the utilisation of AI with regards to Azure Data Factory

The following section delves deep into illustrating the approaches which play a vital role in the utilisation of AI in Azure Data Factory. Azure Data Factory is defined as a cloud-based ETL and data integration service which allows us to create data-driven workflows. These workflows are then analysed for the orchestration of the data movement and transforming the data into a large-scale proportion⁴. Using Azure Data Factory, the work becomes much easier for the creation and scheduling of data-driven workflows which are also referred to as pipelines that tend to ingest the data from disparate data stores. Moreover,

Azure Synapse Analytics also known as "ASA" supplements with a comprehensive analytics service that allows organisations to analyse a large volume of data from SAP ERP in real-time. It is observed that ASA support fosters the integration of SQL Analytics along with big data analytics and machine learning. These factors stand to be crucial for ethically performing the assessments. At the same time, it also gets aligned with the facilitation of ETL which is called Extract, Transform and Load. It aids in processing in a systematic form which makes sure that the SAP ERP data to migrated and transformed effectively for analytical purposes⁵. However, the mathematical functions are termed to be of paramount importance in the field of Data Processing Time which is explained below.



Figure 3: Demonstrating Hybrid Cloud ERP Framework

IV. Illustrating the role of data visualisation with Power BI for real-time analytics and reporting

This section highlights the role of data visualisation with Power BI which poses to be an essential tool. This is because it has helped to present data analytics in visual form by engaging the formats that are rendered to the integration of Power BI with SAP ERP. It aids in supplementing the interactive dashboards and formulation reports that nurture

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valuable insights⁶. Data visualisation can develop comprehension and support strategic decision-making processes resulting in optimising resource allocation. Moreover, the organisation has integrated SAP ERP with Microsoft Azure and data security has become an essential concern. This is used to mitigate the chances of data breaches which curates the importance of the model.



Figure 4: Connecting Microsoft Azure with SAP Data

V. Conclusion

This research project has projected the integration of SAP ERP with Microsoft Azure beneficial for realtime analysis and reporting. This has made a transformative approach which has significantly enhanced to cultivation of data-driven decisions more efficiently by using tools such as Azure Data Factory, Azure Synapse Analytics and Power BI. Getting aligned with the data security standards has navigated to protect sensitive information and has embraced digital transformation in an emerging technological infrastructure. Furthermore, intricately using these technologies has been fabricated to achieve long-term sustainability with competitive advantages and operational excellence in the upcoming days.

Abbreviations and Acronyms

- RTA- Real-Time Analytics
- CA- Competitive Advantage
- ML- Machine Learning
- BI-Business Intelligence
- ADF- Azure Data Factory
- ASA- Azure Synapse Analytics
- ETL- Extract, Transform, Load
- SQL- Structured Query Language
- ERP- Enterprise Resource Planning
- ML- Machine Learning
- BI- Business Intelligence
- ERP- Enterprise Resource Planning
- Azure- Microsoft Azure, a cloud computing service.
- SAP- Systems, Applications and Products in Data Processing.

Units

- Data Size is measured in Gigabytes (GB) and Terabytes (TB)
- Data Rate is measured in Bits per second (BPS)
- Data Throughput is measured in Transactions per seconds (TPS)
- D_e is measured in Gigabytes
- B_t is calculated in Gbps

Equations

- Throughput (TP)= [Total Data Processed (bits) / Total Time Taken (seconds)]
- The foundational concepts of RTA: RTA= [D_t / T_d], where RTA is Real-Time Analytics, D_t is data processed over time and time taken for data processing is denoted by T_d
- Data Processing Time: DPT=[D_e / B_t], where DPT is Data Processing Time, D_e is Data Size and B_t is referred to as Bandwidth.
- ETL Cost= [Development Cost + Maintenance Cost + Operational Cost]
- Data Visualisation: (E) = [Insights Gained / Time Spent on Analysis]

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