E- COMMERCE: AZURE CLOUD ARCHITECTURE

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Introduction

- E-commerce cloud architecture represents a modern approach to building and managing online retail platforms by leveraging cloud computing technologies.
- Unlike traditional on-premises systems, cloud architecture allows e-commerce businesses to utilize scalable, flexible, and cost-effective resources provided by Microsoft Azure.

Mission Statement

The mission is to leverage Azure cloud technology to build a robust and scalable e-commerce platform which will ensure system security, availability and versatility.

Objectives

- Efficient storage
- High availability
- Ensure data security
- Improve sales
- Improve operational efficiency

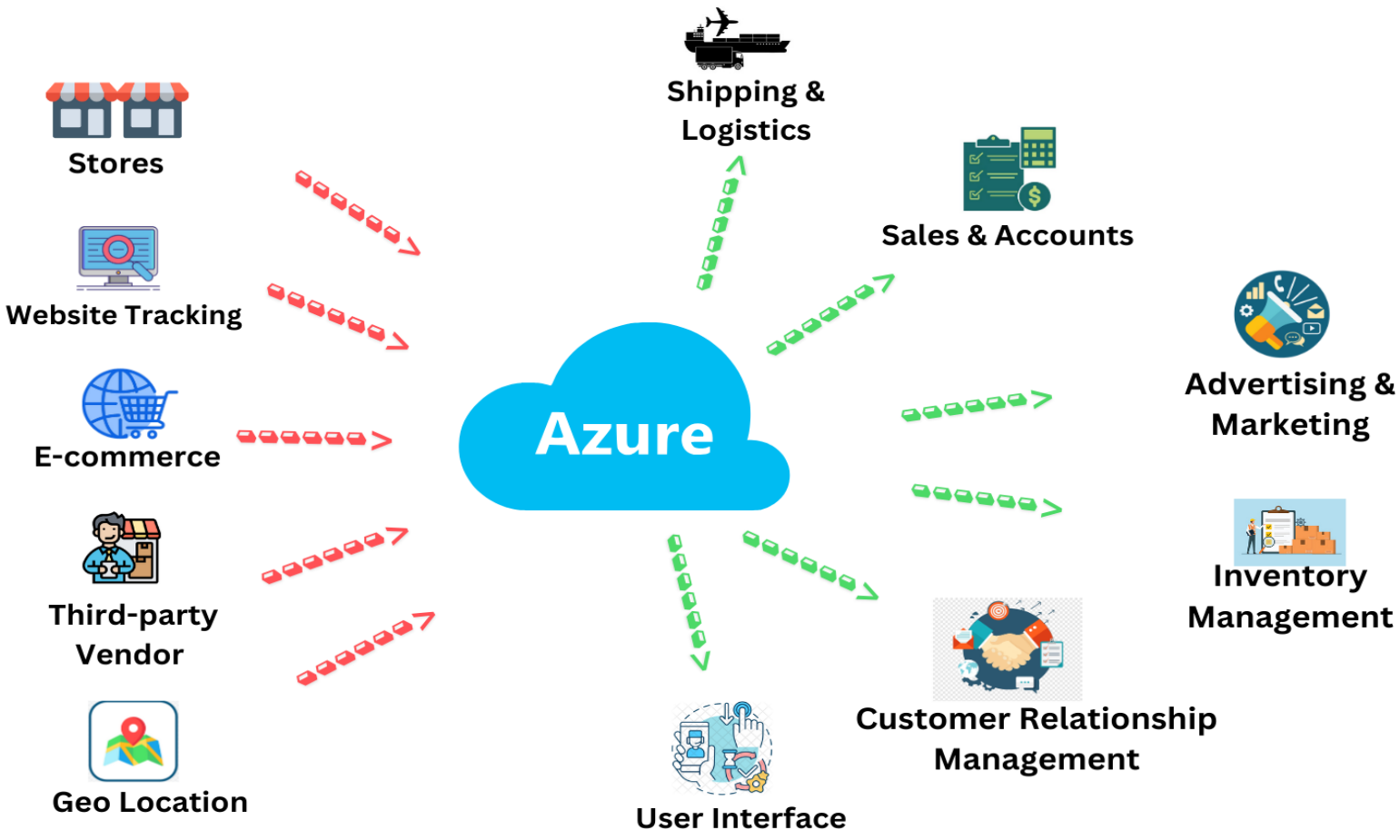
Data source

- Onsite Store – In store data will be like customer feedback, purchase data, inventory data.
- Website tracking – Website data will be like add-to-cart events, conversion rate per product category, and revenue per traffic source.
- Online Store – Online data of customers and their purchases.
- Third-party vendor – Vendor data and all the dealership data.
- Geo location – Different Store location data.

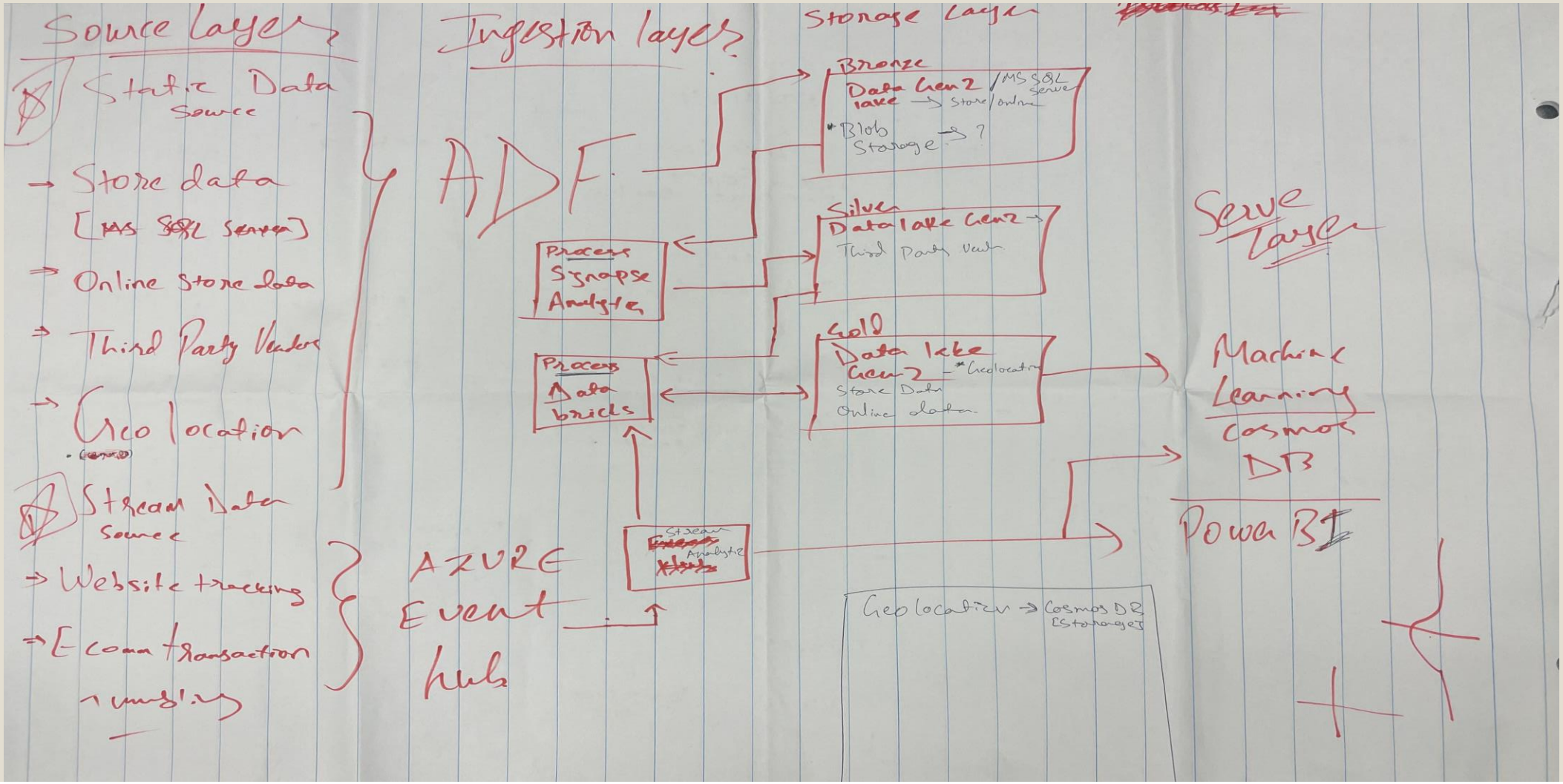
Data consumption identification

- Shipping and logistics – Resolve delay in deliveries
- Sales and accounting – Improve sales of the company
- Advertising and marketing – Advertising on multiple social media platforms
- Inventory management – Manage inventory and fraud detection
- Customer relationship management – Connect with customer and understand their requirements
- On-device experience – Improve UI/UX

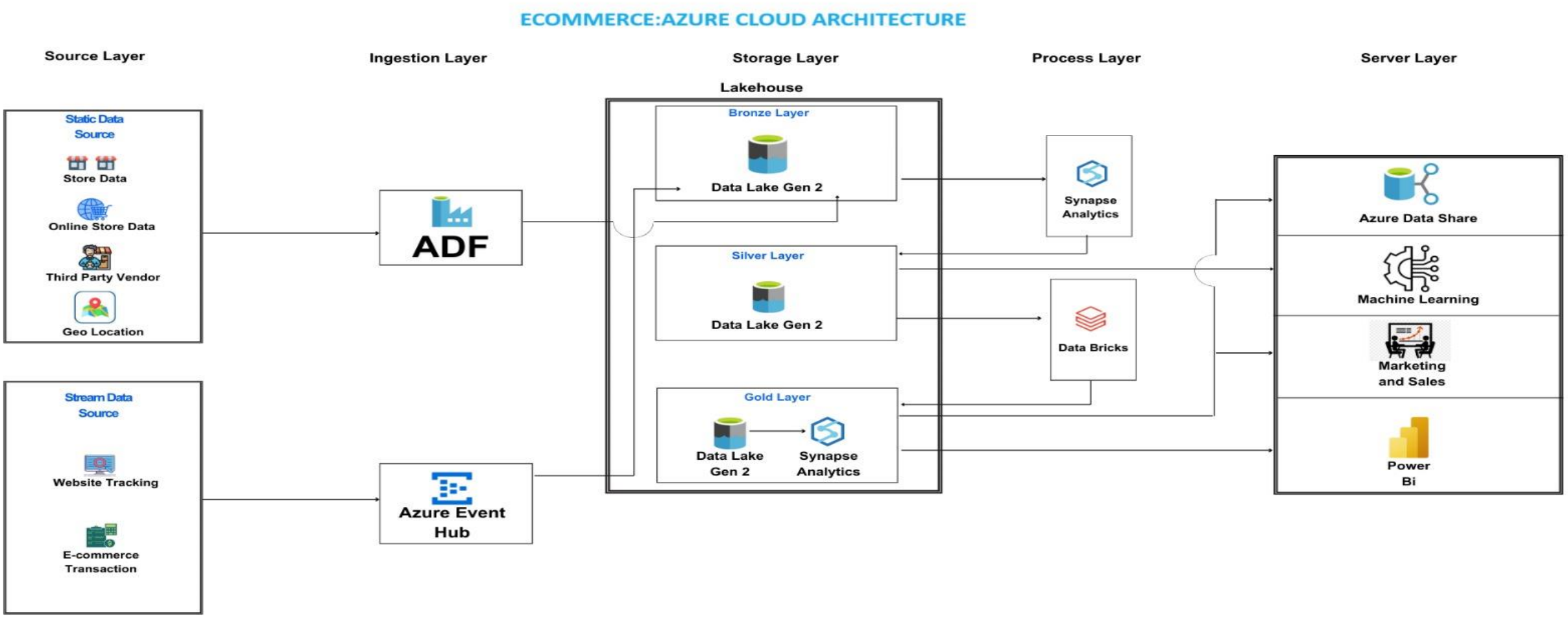
Visual diagram



Phase 1


Source layer
Static Data source
Store data
Online Store data
Third Party Vendor
Geo location
Stream Data source
Website tracking
E-comm transaction
Ingestion layer
ADF
AZURE Event hubs
Storage Layer
Bronze
Data Gen2 lake
MS SQL Server
Blob Storage
Silver
Data lake Gen2
Third Party Vendor
Gold
Data lake Gen2
Store Data
Online data
Process Synapse Analytics
Process Data bricks
Stream Analytics
Geolocation
Cosmos DB
Serve Layer
Machine Learning
Cosmos DB
Power BI

Cloud Architecture



Pipeline Strategy

- Initially all the static data sources will be ingested using Azure data factory and Azure event hub into data lake gen 2 .
- Further the data will be processed into the Azure synapse analytics and insert into curated layer and then the data cleaning will be done in Azure Databricks and inserted into Data lake gen 2.
- In gold layer, Azure synapse analytics will be used for data warehousing and organised data will be obtained.
- The data in silver layer will be supplied for Machine learning and the data in gold layer will be supplied to Marketing team and for data share.
- The stream data source will be processed in stream analytics and supplied to PowerBi for analytics.

Conclusion

- A well-designed e-commerce architecture ensures scalability, reliability, security, and an excellent user experience. Key components include the front-end interface, which interacts directly with customers, the back-end system that manages databases and business logic and the integration of various services such as payment gateways inventory management and customer support systems.

Thank you