INTRODUCTION

ReTreasure is an e-commerce company specializing in antique, vintage, and unique items sold through platforms like eBay, Etsy, and Shopify. This document presents the proposed cloud architecture for managing data from multiple sources, enabling analytics, and supporting business decisions.

MISSION

To design and implement a **scalable, secure, and data-driven** cloud architecture that enables ReTreasure to:

- Manage e-commerce operations efficiently
- Deliver personalized customer experiences
- Make informed business decisions
- Integrate multiple data sources and destinations seamlessly

STRATEGIC OBJECTIVES

1) Enable Centralized Data Integration

2) Enhance Customer Experience

3) Optimize Inventory Management

4)Improve Marketing & Engagement

5) Ensure Accurate Financial Reporting

6)Support Informed Business Decisions

7) Enable Scalable Content Management

8) Maintain High Security & Compliance

CLOUD ARCHITECTURE LAYERS

Data Sources (Ingestion Layer):

a)Geo-Location — Customer location, delivery zones

b)Store Data — POS transactions, in-store inventory

c)Website Data — Clickstream, session durations

d) Currency Exchange — Real-time FX rates

e) Online Transactions — Sales records, payments

Processing Layer:

A)Azure Data Factory & Event Hubs — ELT pipelines

b) Azure Data Lake & Synapse Analytics — Store & analyze

c)Machine Learning — Demand prediction, personalization

d) Real-Time Analytics — Monitor dashboards

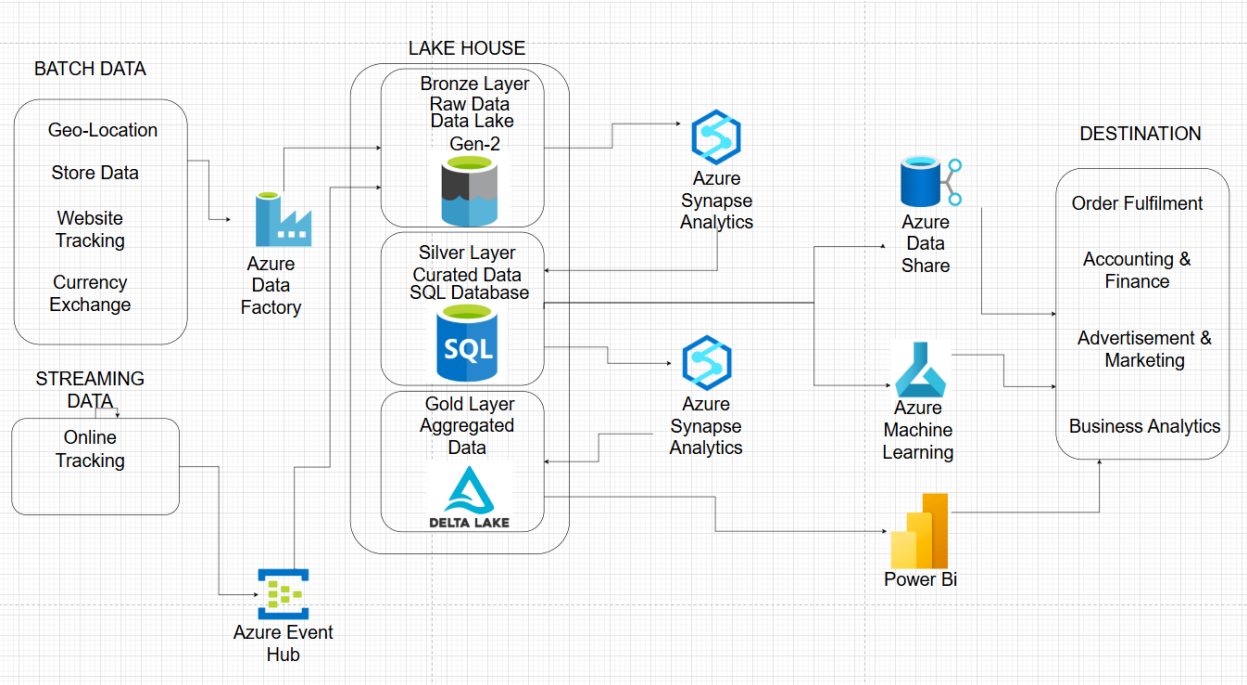
Destinations (Output Layer):

A) Order Fulfillment — Shipment tracking

b)Accounting & Finance — Automated reports

c) Advertisement & Marketing — Campaign targeting

d) Business Analytics — KPI dashboards



LAKEHOUSE LAYERS

Bronze Layer (Raw):

a)Store raw batch/stream data exactly as received

b)Add metadata

c) Mask sensitive data

d) Log ingestion status

Silver Layer (Curated):

a)Clean, validate, and structure data

b)Remove duplicates and nulls

c) Apply business rules

Gold Layer (Business Ready):

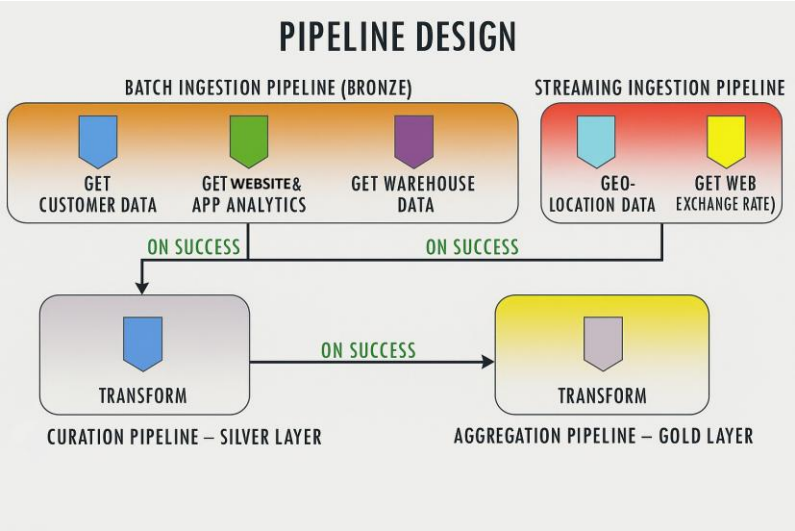
a) Aggregate datasets for analytics and ML

b) Calculate KPIs

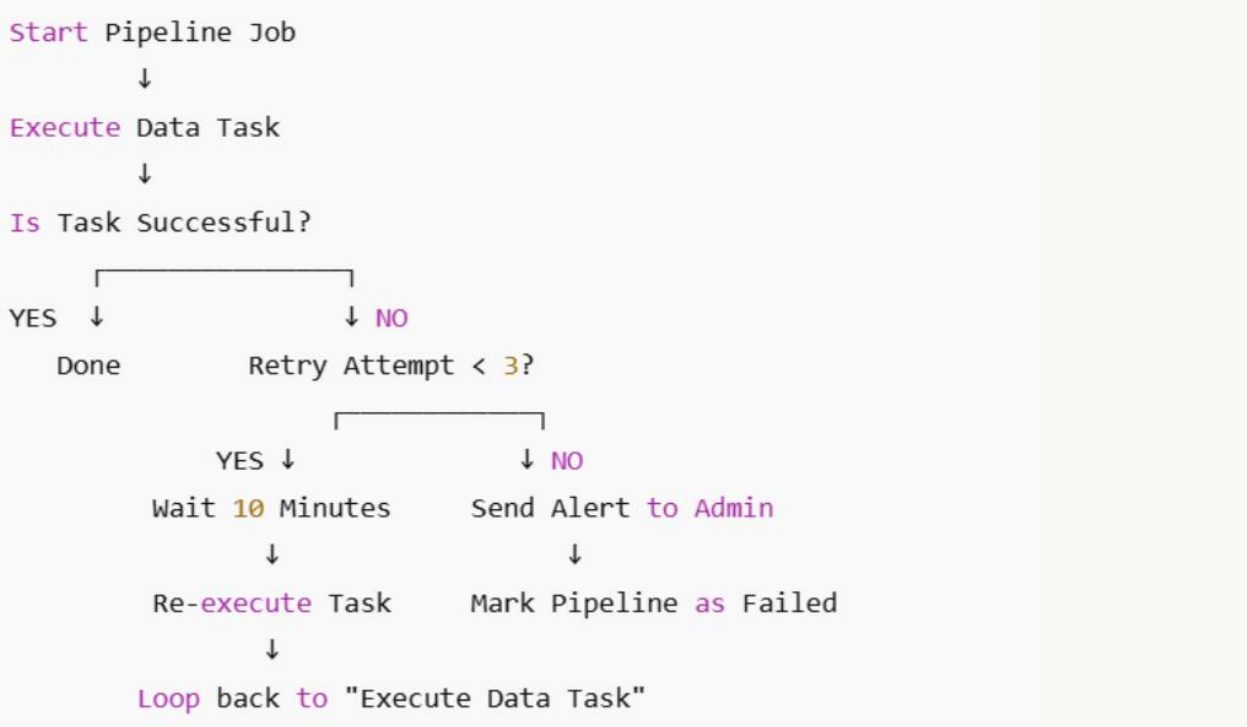
c) Enrich data with external sources

d) Serve to BI tools and ML models

PIPELINE & FAILURE HANDLING



A) Detect failures and log them
B) Retry up to 3 times
C) Quarantine bad data if needed
D) Notify engineers
E) Allow downstream processes to continue



CONCLUSION:

The proposed ReTreasure Cloud Architecture integrates batch and real-time processing through Bronze, Silver, and Gold layers. This design ensures:

- Reliable, accurate data
- Streamlined operations
- Targeted marketing
- Informed business decisions for sustainable growth