Cosmetic Insights – Technology Stack

Date	19 JUNE 2025
Team ID	**LTVIP2025TMID51460**
Project Name	**COSMETIC INSIGHTS: NAVIGATION COSMETIC TRENDS AND CUSTOMER INSIGHTS WITH TABLEAU**
Maximum Marks	4 Marks

Technical Architecture Overview

This solution processes cosmetic product data, performs trend and sentiment analysis, and delivers insights via interactive Tableau dashboards. The architecture includes data ingestion, transformation, visualization, and user interaction layers, deployed using scalable cloud technologies.

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Frontend dashboard and interaction layer	Tableau Public / Tableau Server
2	Application Logic-1	ETL processes, business logic	Python (Pandas, NumPy)
3	Application Logic-2	NLP & Sentiment Analysis	Python (TextBlob / NLTK)
4	Application Logic-3	Dashboard creation and publishing	Tableau Desktop / Tableau Prep
5	Database	Local/Cloud data storage	PostgreSQL / MySQL
6	Cloud Database	Cloud-hosted database	Amazon RDS / Google BigQuery
7	File Storage	Raw product file and insights archive	AWS S3 / Google Cloud Storage
8	External API-1	Product data or social insights	REST APIs (e.g., Sephora API, Twitter API)
9	External API-2	Additional product review scraping	BeautifulSoup / Scrapy
10	Machine Learning Model	Product ranking prediction, sentiment classifier	Scikit-learn / TensorFlow Lite
11	Infrastructure (Server)	Hosting ETL pipelines, dashboards	AWS EC2 / Google Cloud Run / Local Server

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Table-2: Application Characteristics

S.No	Characteristics	Description	Technology Used
1	Open-Source Frameworks	Frameworks used for data processing and ML	Python, Pandas, Scikit-learn, Flask
2	Security Implementations	Data access control, encryption	OAuth 2.0, HTTPS, IAM (AWS/GCP), Firewall
3	Scalable Architecture	Cloud-based, modular ETL and visualization	Microservices, Docker, Kubernetes
4	Availability	Cloud services with autoscaling and failover	Load Balancer, Multi-Zone Deployment
5	Performance	Optimized ETL jobs and caching of insights	Redis Cache, CDN, Efficient SQL queries