Data Sources Layer

MetaTrader 5 - Trade

Execution, Account Data

Binance - Cryptocurrency
 Market Data

Financial News - Market
 Sentiment, Economic
 Events
 Reference Data Instruments, Exchanges,
 Holidays
 Yahoo Finance Real-time Quotes,
 Historical OHLCV
 Alpha Vantage Technical Indicators,

## **User Events -**

**Fundamentals** 

Authentication,
Navigation, Preferences
Trading Events - Orders,
Executions, Settlements
Portfolio Events Allocations, Rebalancing,
Performance
System Logs Application, Security,

Audit

**Configuration Data -**

Strategies, Parameters,

Rules

**Data Ingestion Layer** 

Apache Kafka - Event Streaming Platform Kafka Connect -Source/Sink Connectors

WebSocket Streams -

Live Market Feeds

**API Collectors -**

REST/GraphQL Data Gathering

**Apache Airflow -**

Workflow

Orchestration

## **FTP/SFTP Collectors**

- End-of-Day Files

**Email Processors -**

Reports, Statements

File Watchers -

Directory Monitoring

Data Processing Layer

ML Processing
Model Training - Strategy
Optimization
Model Serving Real-time Predictions

Kafka Streams -

Real-time Event Processing

**Redis Cache -**

Low-latency Data Store

Apache Flink - Complex Event Processing

Python ETL - Custom
Data Processing Jobs
dbt - SQL-based Data
Transformation

Data Access Layer

REST API - Standard HTTP
Interface

GraphQL API - Flexible Data
Queries
qRPC API -

High-performance RPC

**Presto** - Distributed SQL Query Engine

**Spark SQL -** Big Data SQL Processing

**Snowflake** - Cloud-native Query Engine

**Redis** - In-memory Query Processing



Analytics and BI Layer

**Dashboard API** - Embedded Visualizations

**Alert Engine** - Real-time Notification System

Mobile Analytics - Native App Integration

**Looker** - Business Intelligence Platform

**Tableau** - Advanced Data Visualization

Google Data Studio -Dashboard Creation Data Storage Layer

Elasticsearch - Search
and Analytics
InfluxDB High-performance
Time-series
AWS S3 - Data Lake
Storage
Delta Lake - ACID
Transactions on Data Lake

Document Storage
Sharded Collections Horizontal Scaling
Time-Series Collections Market Data
Atlas Search - Full-text
Search Engine

**MongoDB Cluster -**

Snowflake Data
Warehouse - Analytics
Platform

PostgreSQL Cluster - OLTP Workloads