

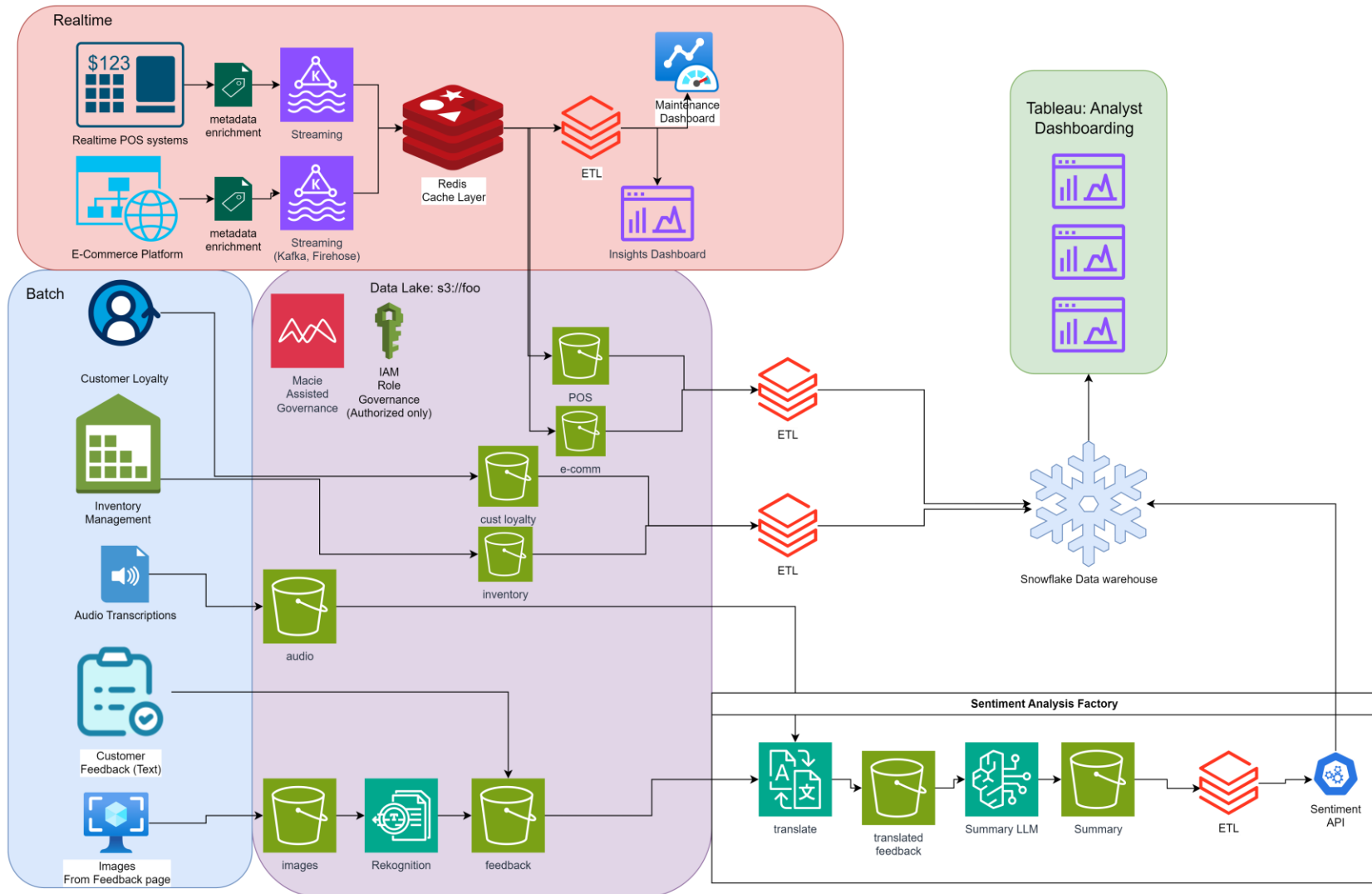


## Real-Time Retail Analytics Platform Case Study

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# Architecture diagram



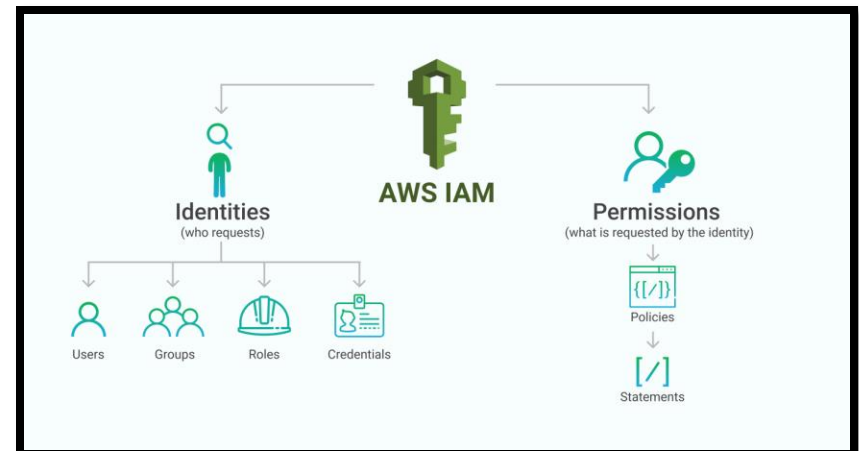
## Tool and Technologies

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- Kafka/Firehouse - Kafka handles high volume, real-time data streams. Firehouse efficiently transfers this data into S3 and Redis
- Amazon Rekognition - The service utilizes models that are responsible for analyzing images and extracting information in the form of text
- Amazon Macie - Responsible for monitoring s3 buckets for sensitive data like PII information and data security risks
- AWS IAM – Allows us to create IAM roles
- Redis - Serves as a data store that the dashboard can query from
- Amazon Translate – It can be used to translate bodies of text into a specific, desired language.
- AWS Bedrock – Allows us to obtain summaries about vast textual data obtained from audio recordings, images and customer feedback
- Tableau – Allows us to generate dashboards and reports
- Amazon S3 – The S3 buckets that we have included in our pipeline make up a data lake and such data can be leveraged by data scientists to train machine learning models
- Snowflake – Great option for the data warehouse component of the data pipeline

## Data quality, Governance, Security, and Privacy.

- AWS Macie
  - Protects sensitive data in Amazon S3 by automatically classifying and monitoring data for security threats
  - Macie will generate detailed reports if it comes across sensitive data
  - Notify Administrators of when new sensitive data is discovered or when unauthorized breaching attempts occur.
- IAM Roles
  - Manages access to AWS resources strictly based on user roles and responsibilities, ensuring that only authorized personnel have access to specific data and actions.



## Real-Time Dashboards and Reports

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### Real time Maintenance Dashboard:

- System health
- Backlogged work order levels,
- Downtime of key systems
- Time between failures for key system

### Real-time POS Dashboard:

- Real Time Sales Data
- Transaction Details
- Customer Insight

### Real time Ecommerce Dashboard:

- Real-Time Sales Metrics
- Traffic Analytics
- Conversion rate
- Inventory Management