aws SUMMIT
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OET207

How Swiggy uses Amazon ElastiCache to power their ML feature store

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Agenda

- Quick overview of AWS databases

- Amazon ElastiCache use cases

- Machine Learning(ML) process flow and need for a feature store

- Benefits of Amazon ElastiCache as an ML feature store

- About Swiggy and its ML landscape

- Swiggy's requirements from a feature store

- Why Amazon ElastiCache was a great fit

- Resources

Most complete set of relational & purpose-built databases

Amazon
RDS

Amazon
Aurora

KEY-VALUE

Amazon DynamoDB

DOCUMENT

Amazon DocumentDB

CACHING

Amazon ElastiCache

GRAPH

Amazon Neptune

TIME-SERIES

Amazon Timestream

MEMORY

Amazon MemoryDB

WIDE COLUMN

Amazon Keyspaces

LEDGER
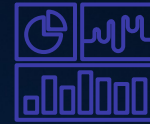
Amazon QLDB

Amazon ElastiCache use cases

Real-time application data caching
Store frequently used data in-memory for microsecond response times and high throughput

Session store
Store ephemeral session data (authentication information, cookies) for internet-scale applications

Cost-optimized real-time analytics performance
Reduce cost and access real-time analytics performance

Geospatial
Real-time geospatial data at scale and speed, for ride-hailing, online dating, social media, and gaming

Leaderboards
Simplify application development with built-in data structures including re-ranking of sorted set in real time

Media streaming
Store live streaming data including metadata for user profiles, authentication
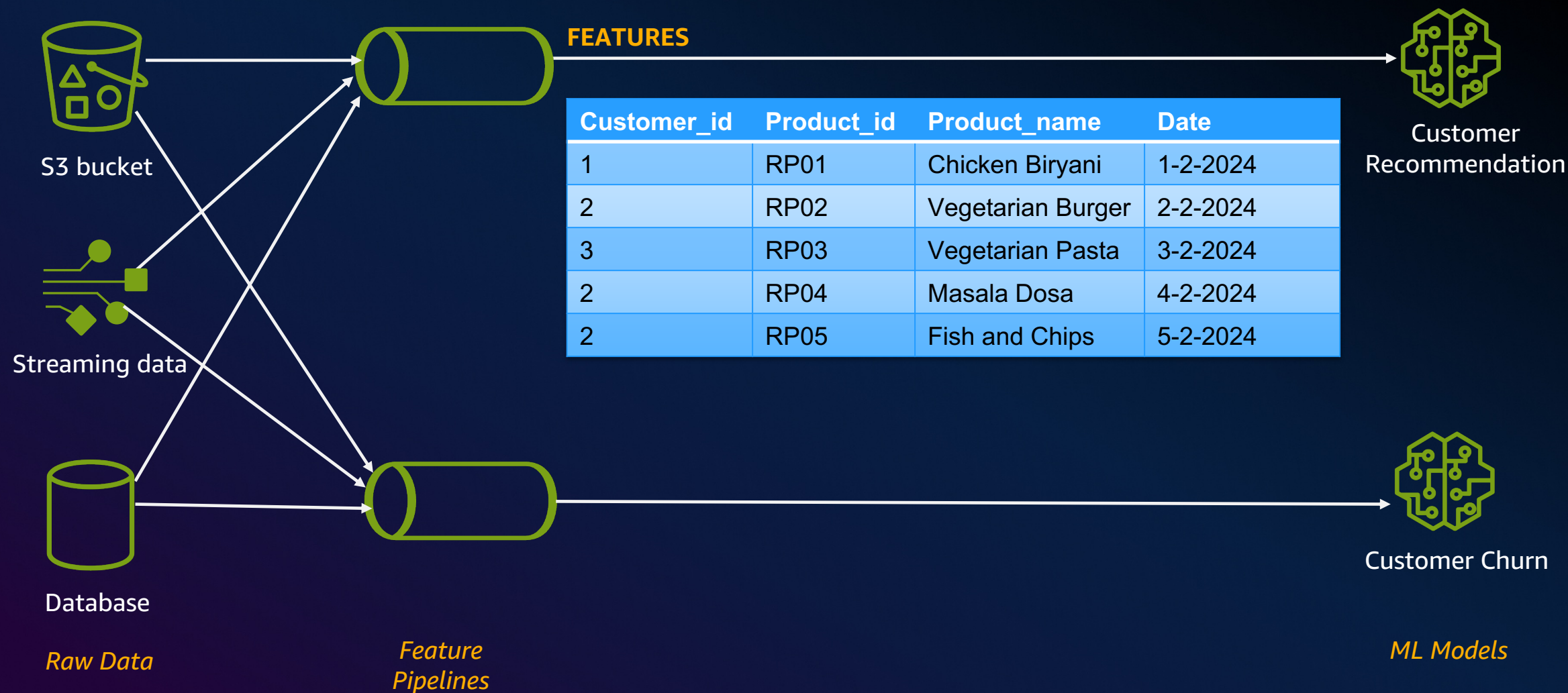
Chat and messaging
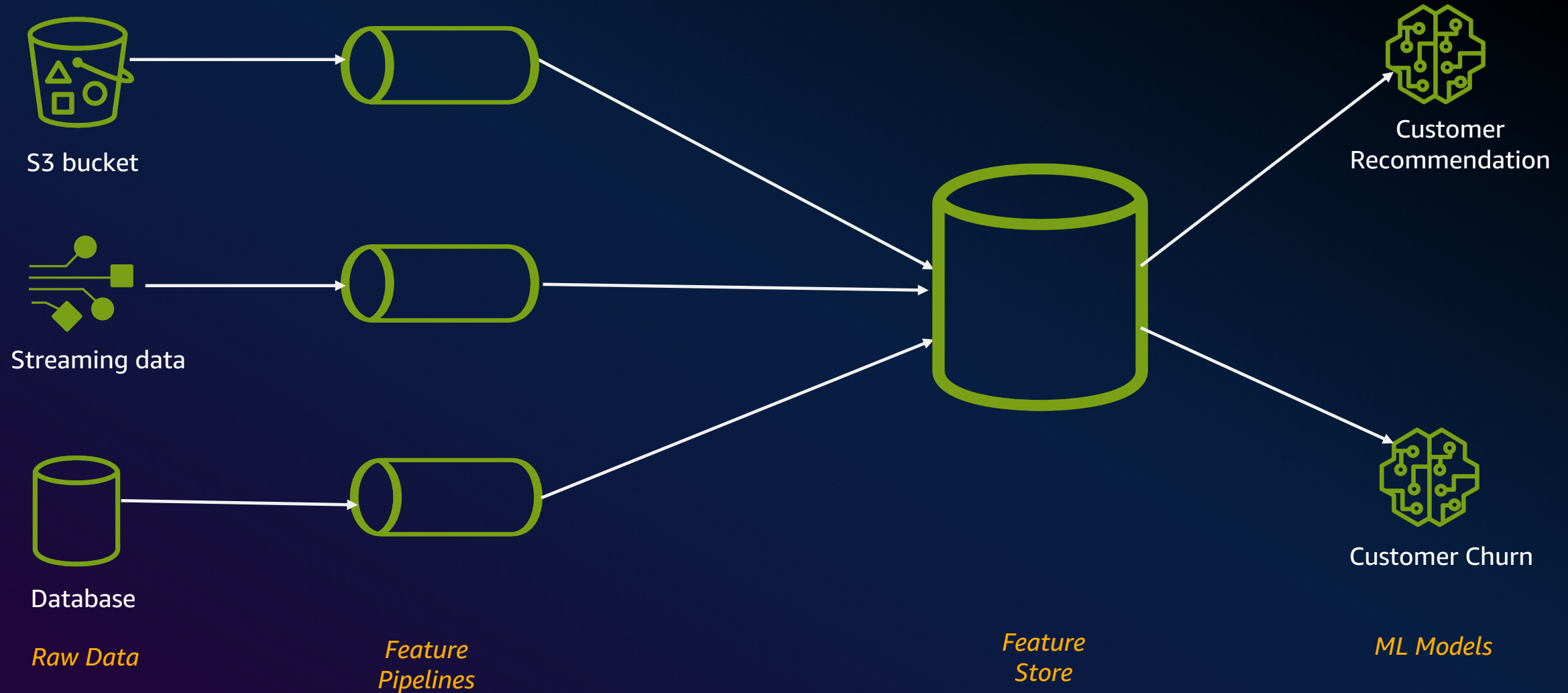Use PUB/SUB standard to support high performance chat rooms and real-time comments

Machine learning
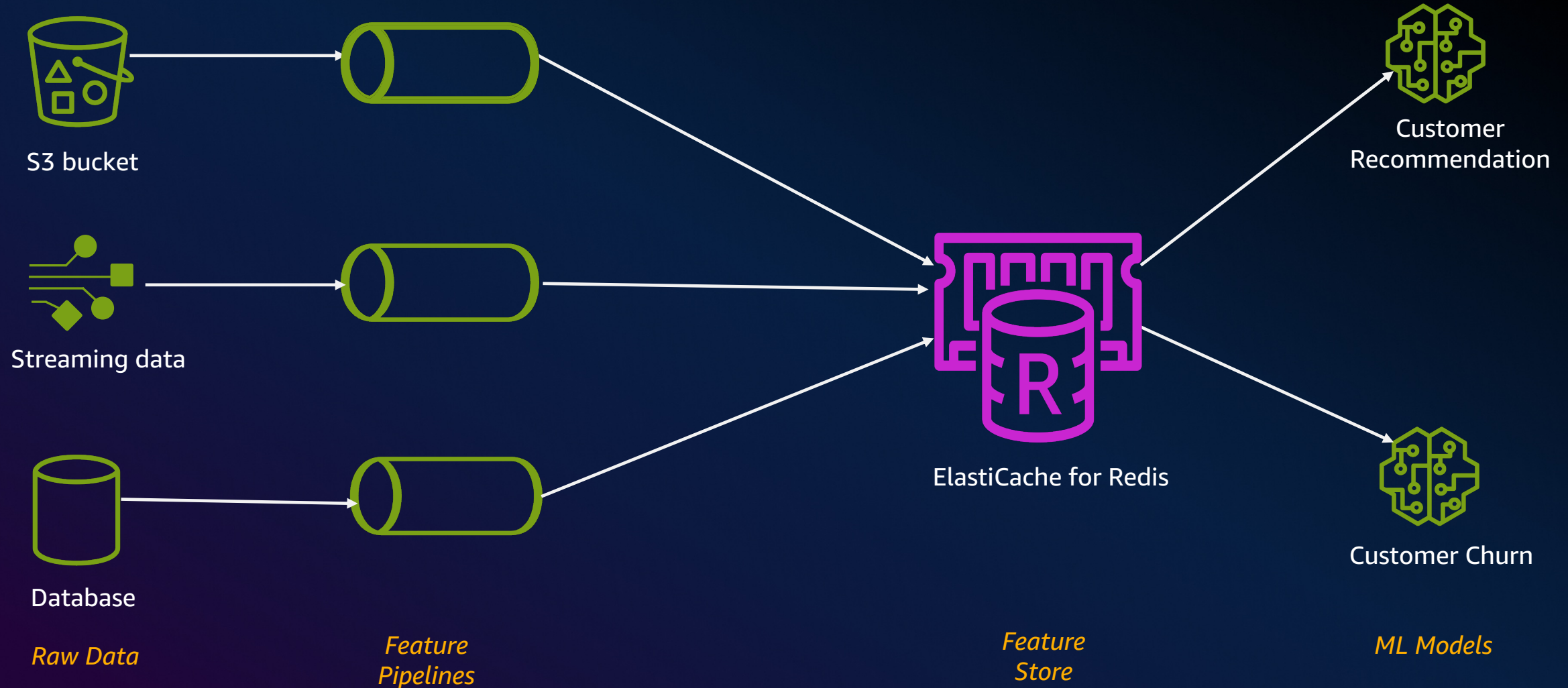Feature store for machine learning workloads

Typical Machine Learning(ML) workflow

FEATURES

Customer_id	Product_id	Product_name	Date
1	RP01	Chicken Biryani	1-2-2024
2	RP02	Vegetarian Burger	2-2-2024
3	RP03	Vegetarian Pasta	3-2-2024
2	RP04	Masala Dosa	4-2-2024
2	RP05	Fish and Chips	5-2-2024

S3 bucket

Streaming data

Database

Customer Recommendation

Customer Churn

Raw Data

Feature Pipelines

ML Models

Machine Learning(ML) workflow with a Feature Store

S3 bucket

Streaming data

Database

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Raw Data

Feature Pipelines

Feature Store

ML Models

ML process with Amazon ElastiCache(for Redis) as an Online Feature Store

S3 bucket

Streaming data

Database

ElastiCache for Redis

Customer Recommendation

Customer Churn

Raw Data

Feature Pipelines

Feature Store

ML Models

Benefits of Amazon ElastiCache(EC) as a Feature Store

- ## High Performance
  In-memory caching, scales to millions of operations per second, sub millisecond read/write response times

- ## Fully Managed
  Hardware provisioning, software patching, configuration, monitoring, failure recovery, backups

- ## Highly Available and Reliable
  EC clusters deployed across multiple AZs with automatic failover

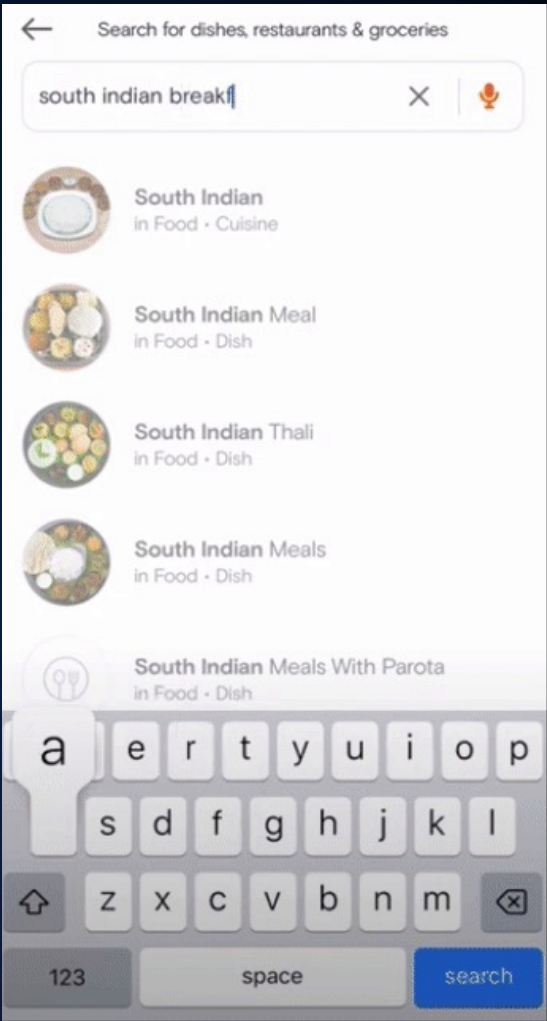- ## Cost Effective
  Pay as you go pricing

- ## Scalable architecture
  Designed to support online cluster resizing

- ## Security Controls
  IAM support, encryption using customer managed keys stored in KMS, secure internode communications

Swiggy – 3 Way Market Place
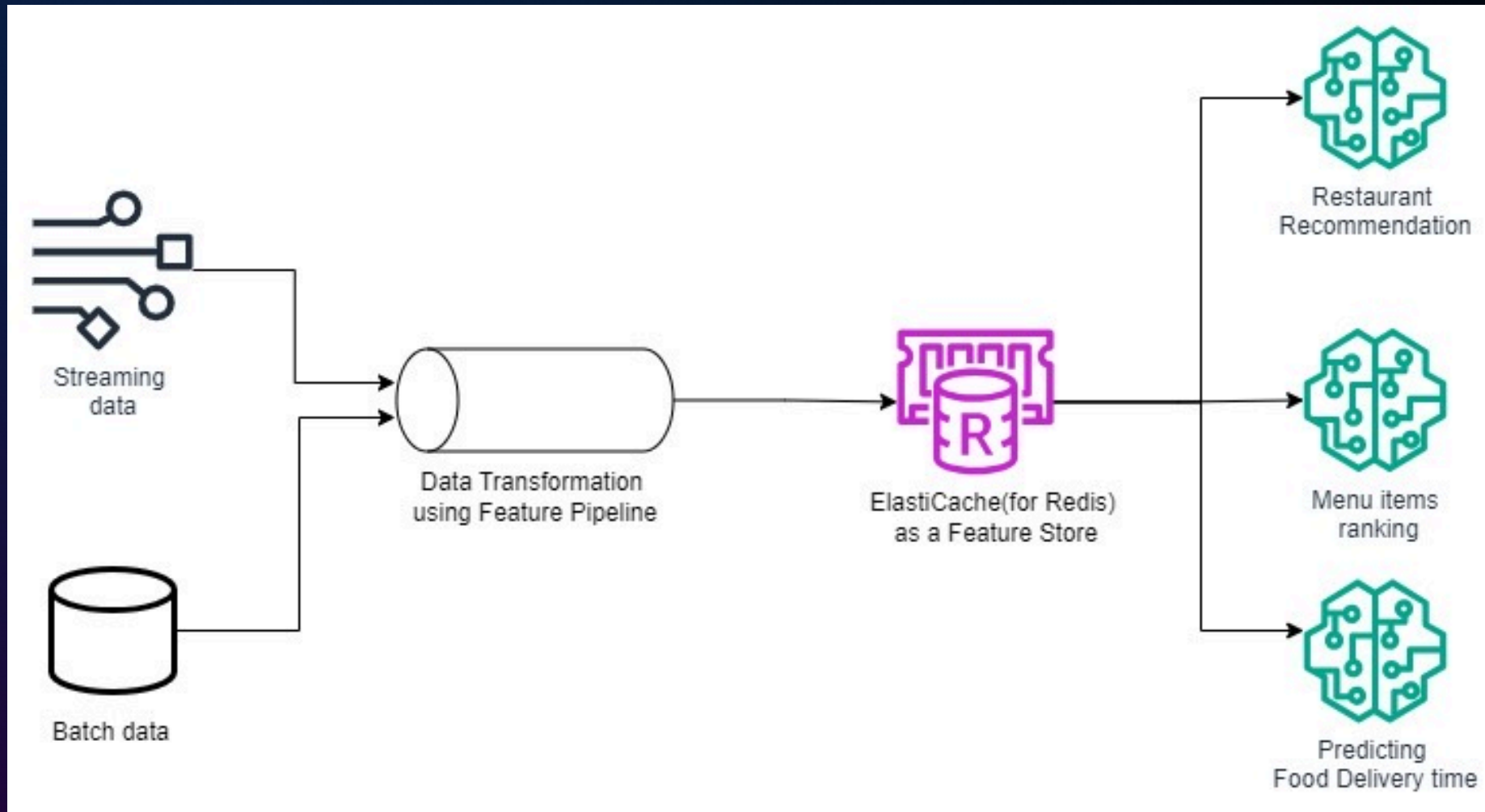

100+ ML Models

1 million
prediction at peak

1000+ ML Features

Swiggy's requirements from an ML Feature Store

- **Persistent scalable storage** – handling billions of Records to be stored
- **High Read Throughput** – supporting millions of Feature look up per second
- **Autoscaling** – on-demand scaling
- **Efficient Batch Writes** – enabling full data refresh
- **Low latency** – sub milliseconds to fetch the features
- **Cost Effective**

Amazon ElastiCache for Redis as a feature store for Swiggy

Benefits of Amazon ElastiCache as a Feature Store for Swiggy

- millions/second read requests served from ElastiCache

- <10 microseconds response time

- Reduced management effort

- Automatic backup used for analytics workload

- Read replicas to achieve higher availability by spreading out read workloads

- No manual efforts in autoscaling

- Auto-failover - no midnight pager alerts when a node goes down.

- Cost effective

Amazon ElastiCache Resources

Browse Amazon
ElastiCache
Resources

ElastiCache as a
Feature store

Thank you!

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