

# Project Design Phase-I

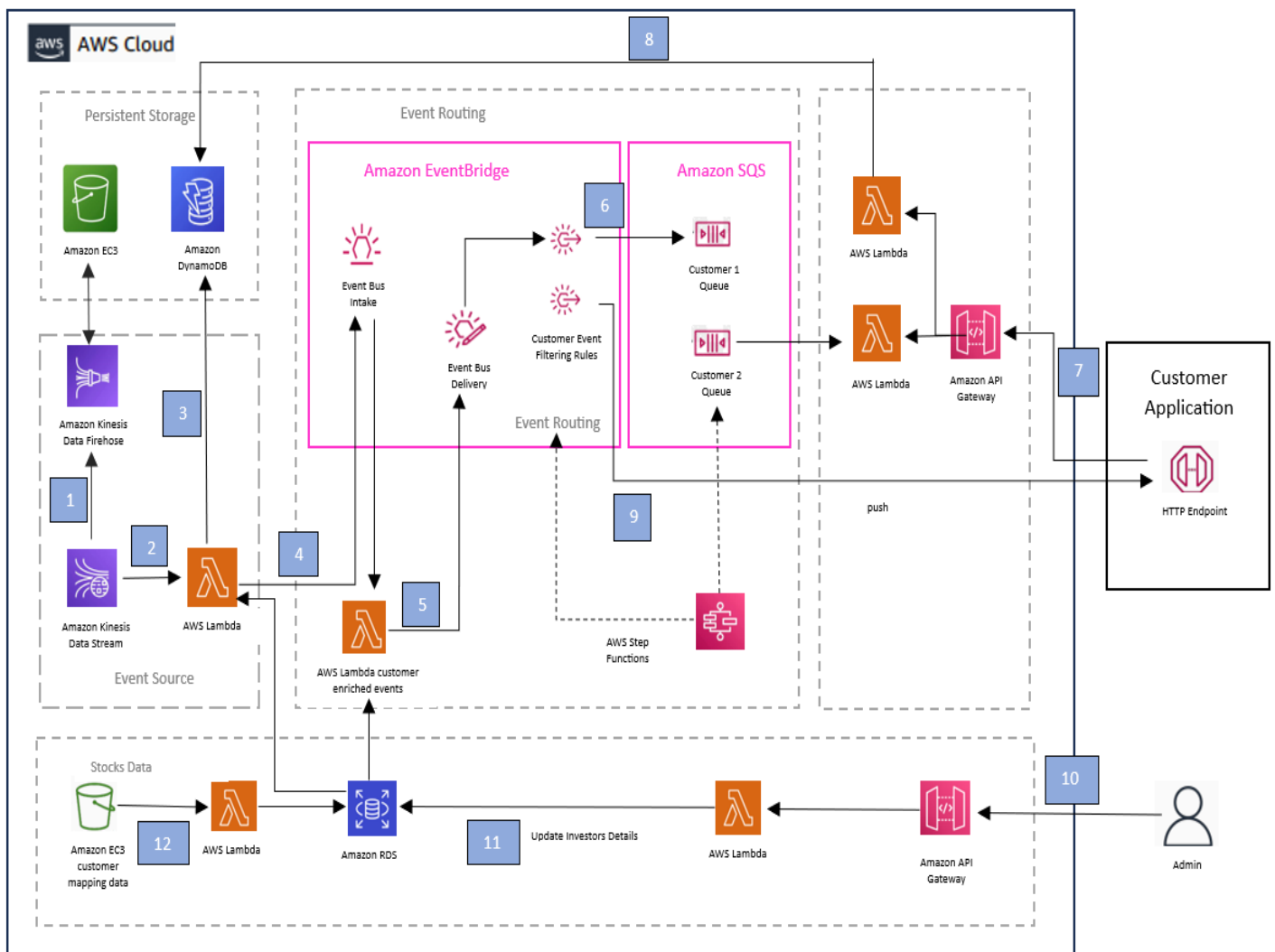
## Solution Architecture

Date	14 October 2023
Team ID	Team- 591267
Project Name	Project on Tata Power Stock Analysis

### Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.



- 1) Stream Tata Power stocks data into real-time streaming platforms such as Amazon Kinesis Data Streams. Store raw events in Amazon Simple Storage Service (Amazon S3) for long-term retention.
- 2) AWS Lambda process streaming events such as event validation, transformation, filtering, and more. Amazon Relational Database Service (RDS) contains reference data—including subscription status, event schema, and event types—required to process events.
- 3) Lambda stores processed events in Amazon DynamoDB. DynamoDB serves as data layer for on-demand request APIs.
- 4) Lambda sends transformed events to the Amazon EventBridge default event bus.
- 5) Lambda retrieves events from the EventBridge default event bus, enriches them with data stored in Amazon RDS, and sends them to a delivery event bus.
- 6) EventBridge rules process the matching events and route them to customer specific Amazon Simple Queue Service (Amazon SQS) queues to be buffered until consumed.
- 7) The HTTP endpoint(which can also be made a starting point) makes an API call to Amazon API Gateway which invokes Lambda to process the API requests.
- 8) For real-time streaming data, Lambda pulls events from Amazon SQS queues. For on-demand requests, Lambda reads events from a DynamoDB table
- 9) Alerts and other time-sensitive events are routed to customer-specific HTTP endpoints using an EventBridge API target.
- 10) An admin invokes Amazon API Gateway to onboard new customers requesting subscriptions for Tata Power Stock data.
- 11) AWS Lambda stores customer data subscription request details in the Amazon Relational Database Service (Amazon RDS) database.
- 12) A bulk or batch reference data point regarding investors and stock data is uploaded/updated into an Amazon Simple Storage Service (Amazon S3) bucket and Lambda loads it into the database.