

AWS Ecosystem Business Unit – Generative AI COE

Email EAR (Extract, Act and Respond)

Overview

In today's era, there are unprecedented ways of engaging the customer and this includes both traditional and digital channels. Unified experience across channels is key for customer delight. Despite the rise of alternative options, email remains a preferred communication channel for customer support. Email provides unique benefits like maintaining a history of interactions, allowing customers to comprehensively explain issues and enabling file attachments for additional context.

However, the prioritization and queuing of emails often lead to delayed responses that create poor customer experiences. GenAI powered email EAR (Extract, Act and Respond) solution aims to transform the customer support process by automating the reading, analysis and thoughtful response to incoming emails.

Specifically, this solution can extract the core query, complaint, or issue within an email. It then understands what actions are required to resolve the customer's needs. Finally, it generates a user-friendly, detailed response explaining steps taken to address their questions or concerns.

GenAI email EAR (Extract, Act and Respond)

The solution provides the following capabilities:



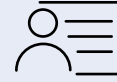
Email context extraction:

LLM-powered natural language processing is leveraged to extract the question or request from the email, classify the type of email and understand the sentiment or tone of the sender.



Response generation:

The system leverages LLM natural language generation capabilities to compose a response incorporating the results of the actions above in a well-structured format tailored to the email context, classification and sentiment.



Explainability: The system can explain the reasoning and data flows behind its actions to enhance transparency using capabilities like the ReAct framework.



Agent routing: Take advantage of LLM agents to route emails to the respective handler for subsequent actions.



Actions: Perform the following actions based on the defined context

- **Corpus search / FAQs:** Relevant answers are retrieved from the knowledge base using semantic search based on the customer inquiry. This is enabled through a retrieval-augmentation-generation (RAG) framework.
- **Transactional retrieval:** If transactional data is required for the response, the system triggers a database search.
- **Log ticket/Service request:** If the email requires a ticket or service request, the system automatically logs it and extracts details like ticket number and description

Below is the high-level solution process flow: -

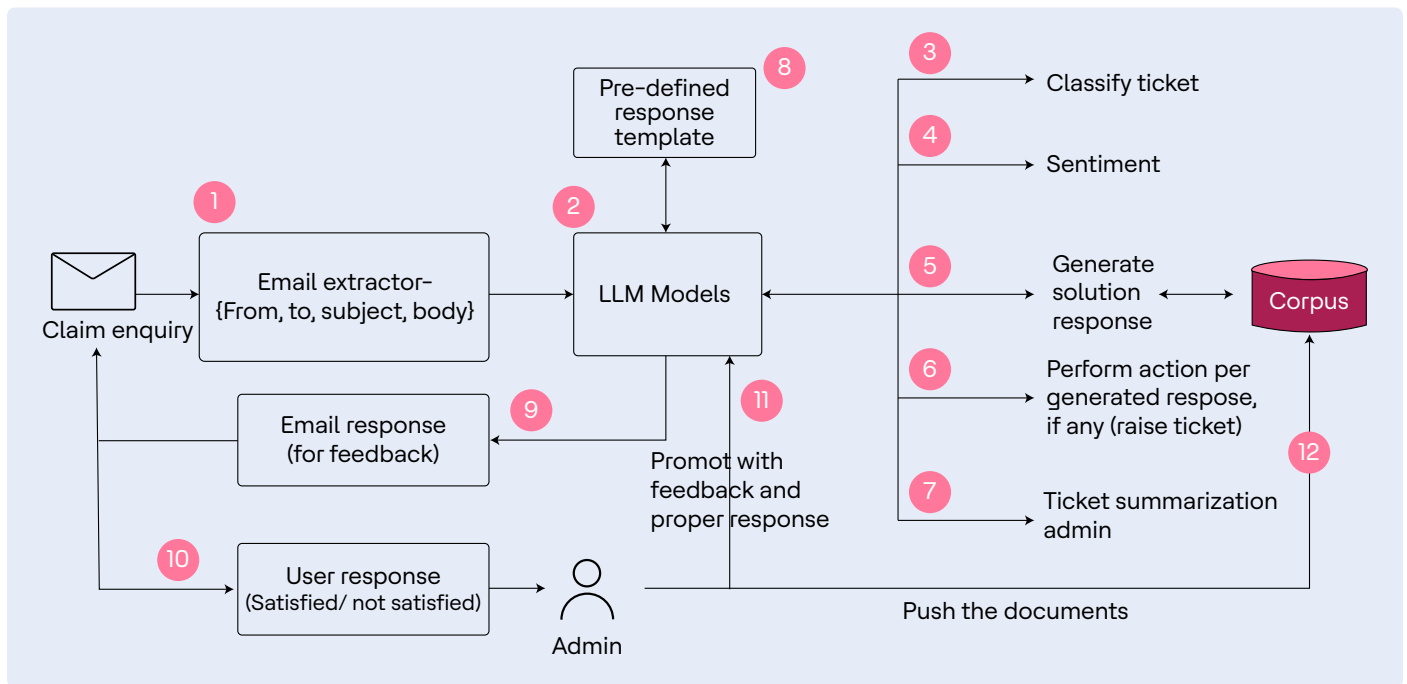


Figure 1: - Process Flow - Gen AI Email EAR (Extract, Act and Respond)

- The customer sends an inquiry, question, complaint, etc. via email to the respective support email address.
- The email extractor and parser extracts the text from the email body/attachment and passes it to the fine-tuned large language model (LLM) to generate context.
- The LLM understands the context of the email along with the overall sentiment from the email text. Based on the context, the LLM agent/action router triggers one of the following actions:
 - Corpus search / FAQs: Searches relevant answers from the knowledge corpus (PDF documents, FAQs, etc.).
 - Transactional retrieval If the agent determines the response requires transactional data, it triggers the respective database search.
 - Raise the ticket/SR: If the agent determines an SR should be created in the respective application/database, the agent triggers the respective ticket creation function and retrieves the ticket number and other details to send back to the customer.
- Once the agent gets back the response from one of the actions, it embeds the email context along with the response and send it to the generative LLM responder.
- The LLM generate the final response from all these inputs and triggers the action to send the response back to the customer.
- The customer can review the response and, if dissatisfied with the model-generated email, submit feedback explaining issues with the response.
- The original response, along with the feedback, goes for admin review. The admin can further review/edit the response and submit it to improve future responses.
- The admin can also review the generated action plan for each response, which provides insights into how different actions are triggered based on customer queries.

Technical architecture

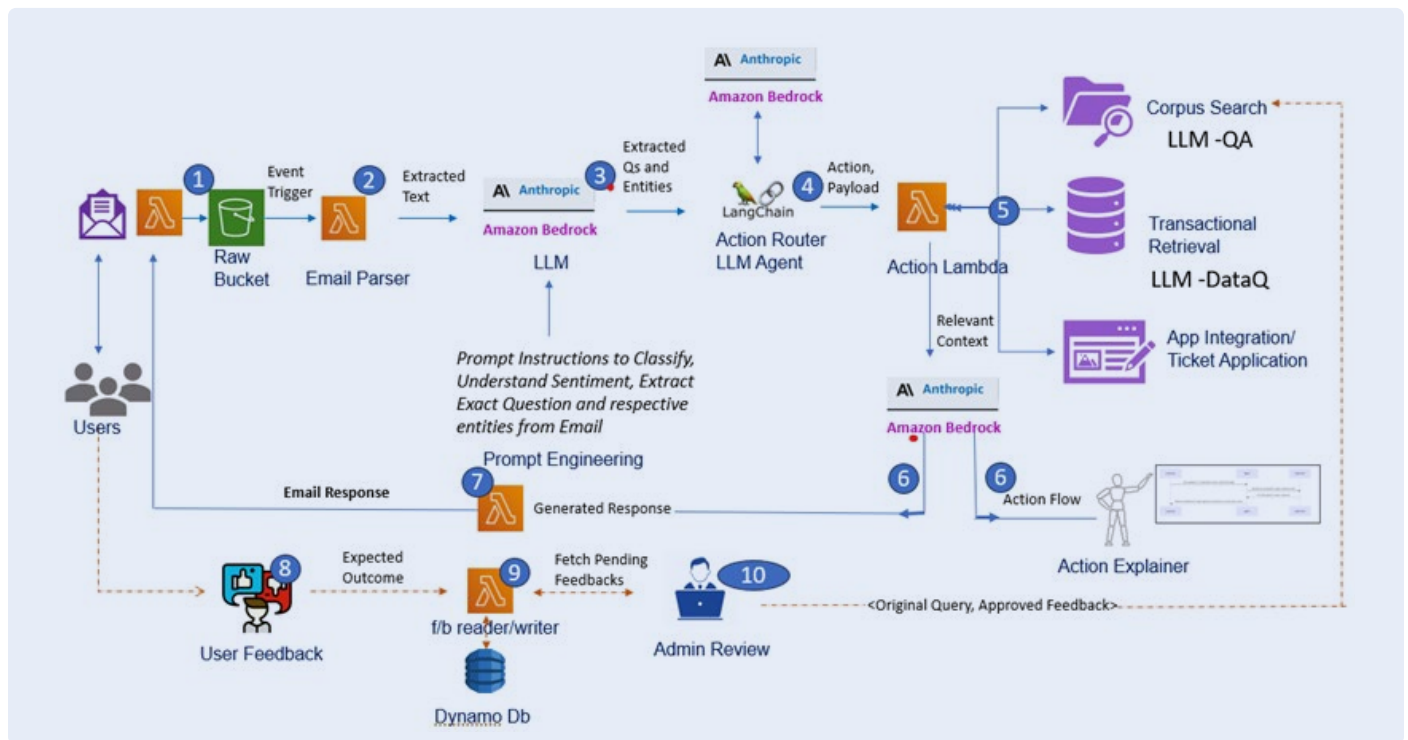


Figure 2: -Technical architecture - GenAI Email EAR (Extract, Act and Respond)

GenAI email EAR key features



Automated extraction:
Automatically extracting the exact query, complaint, or issue from the email context.



Action routing:
Understanding what action needs to be taken to address the customer's query based on defined actions.



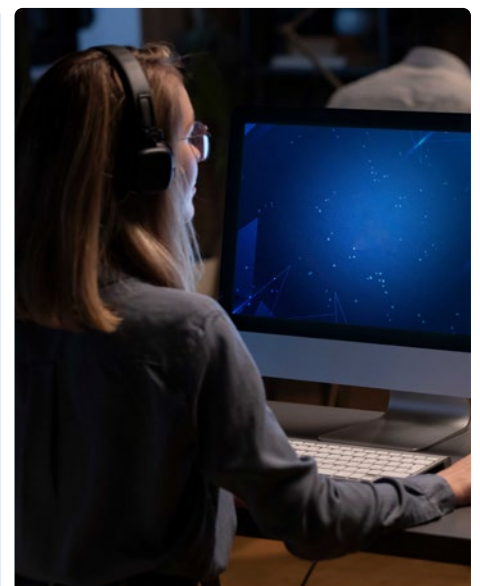
Generative response:
Generating a user-friendly, well-structured response that addresses the customer's query or complaint.



Explainable action plan:
Providing an action summary explaining how a particular response is generated through a series of steps, along with a self-explanatory visual representation. This ensures the generated action is logical, improving the process.



Human intervention:
Administrative review whereby the process is evaluated, refined and improvements are fed back into the model. This establishes a continuous feedback loop for refining and articulating responses aligned with customer expectations.



GenAI email EAR benefits

- This solution assists organizations in enhancing the customer experience for email responses. Automating responses to customer queries or integrating with applications to retrieve data or generate tickets facilitates completing the overall process without delays.
- Timely and accurate responses help in increased self-service, reduced customer service inquiries and higher customer satisfaction.
- Human review of generated responses allows validation of customer feedback and enhancement of the knowledge base via feedback-driven updates.
- Overall agent productivity stands to improve, as the solution can be seen as an agent assist that enables reviewing automatically generated responses and interacting with customers accordingly.
- The solution's adaptability allows it to be implemented across various verticals to address common customer pain points.

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