

AWS Capstone Project 06

Send Fanout Event Notifications with Amazon Simple Queue Service (SQS) and Amazon Simple Notification Service (SNS)

This capstone project will be executed in 5 different modules:

Phase 1: Create an Amazon SNS Topic: Here we will be creating a Amazon SNS topic, a topic is a communication channel to send messages and subscribe to notifications.

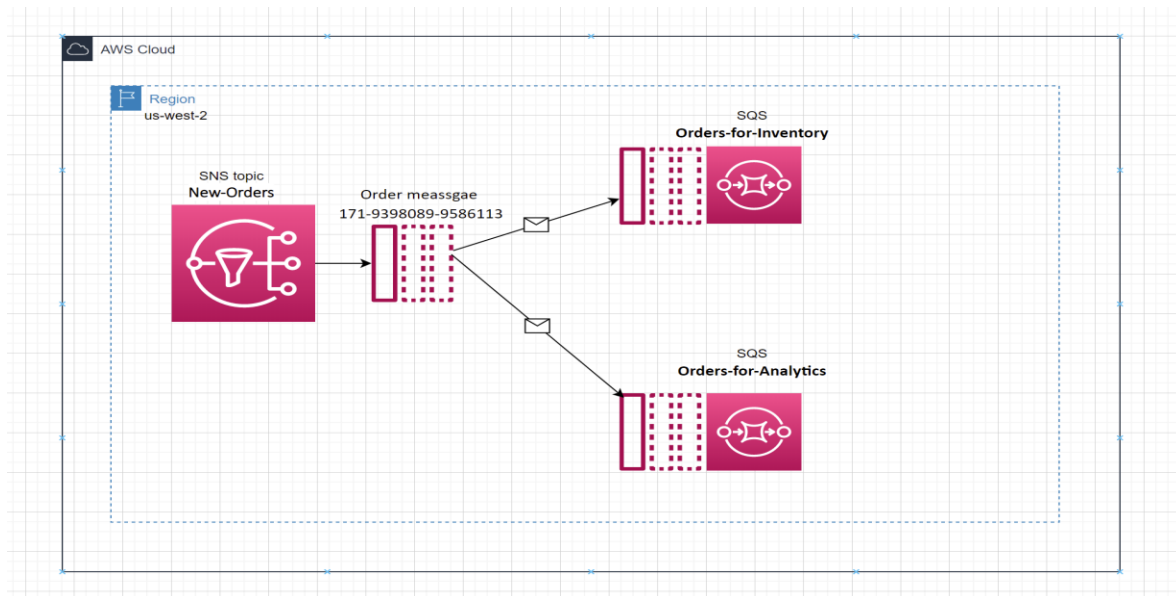
Phase 2: Create an Amazon SQS Queues: Here will create Amazon SQS queues that will subscribe to the topic. Here two queues will be created **Orders-for-Inventory** and **Orders-for-Analytics**

Phase 3: Subscribe the Queues to the topic: Here both queue's Orders-for-Inventory and Orders-for-Analytics will subscribe to the topic **New-Orders**

Phase 4: Publish message to the topic: In this step, you will simulate a new order with a push message to the topic with the order details.

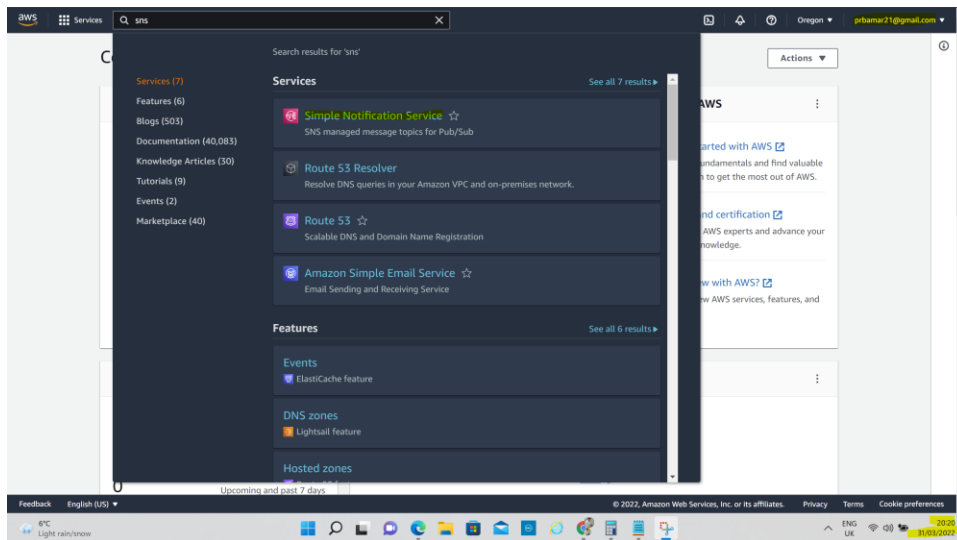
Phase 5: Verify the subscriptions: In this step, you will confirm that the queues (Orders-for-Inventory and Orders-for-Analytics) received the new order notification by viewing the message that the topic (New-Orders) sent to the queues.

Architecture diagram

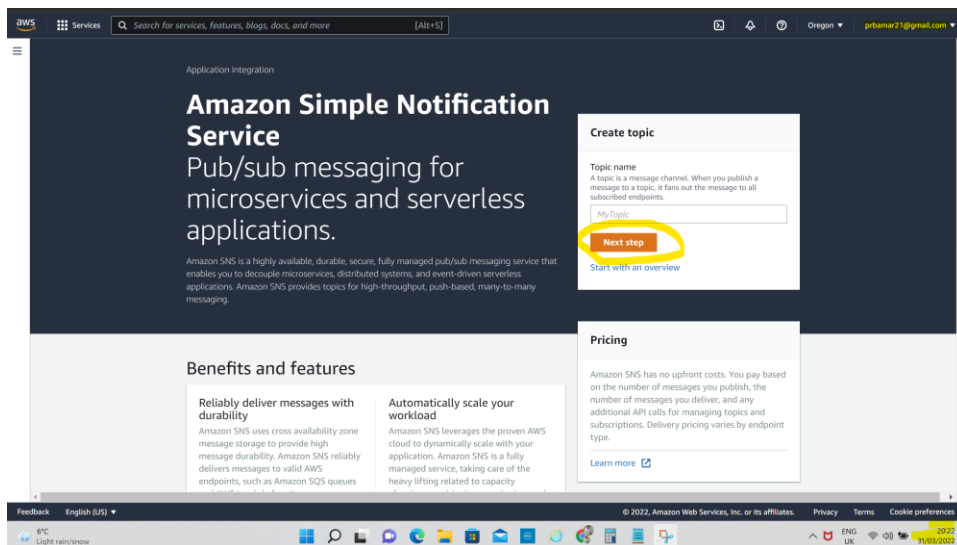


Phase 1: Create an Amazon SNS Topic

1a. When you go to AWS Management Console When the screen loads, in search bar and select Simple Notification Service to open the service console.

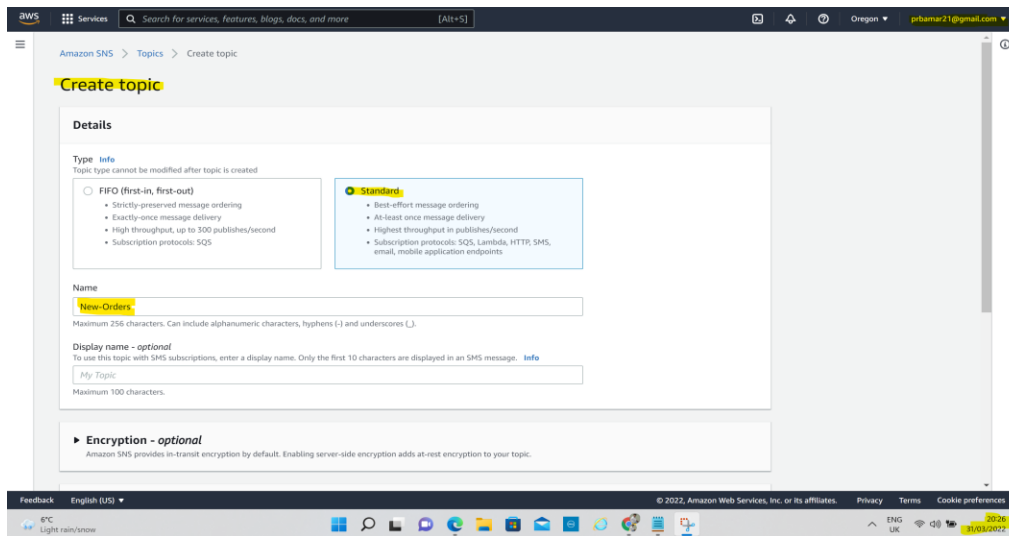


SNS console landing page appears, click Next step.

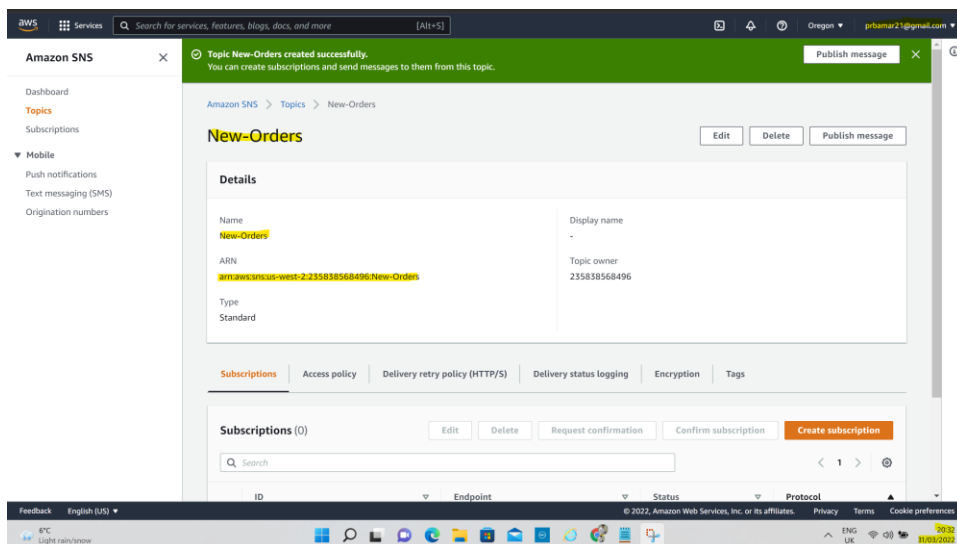


1b. In the Create topic page, select standard and type New-Orders, in the topic name box, keep other option as default then click Create topic

We can select either Standard or FIFO depending upon the use cases, here we have selected standard.

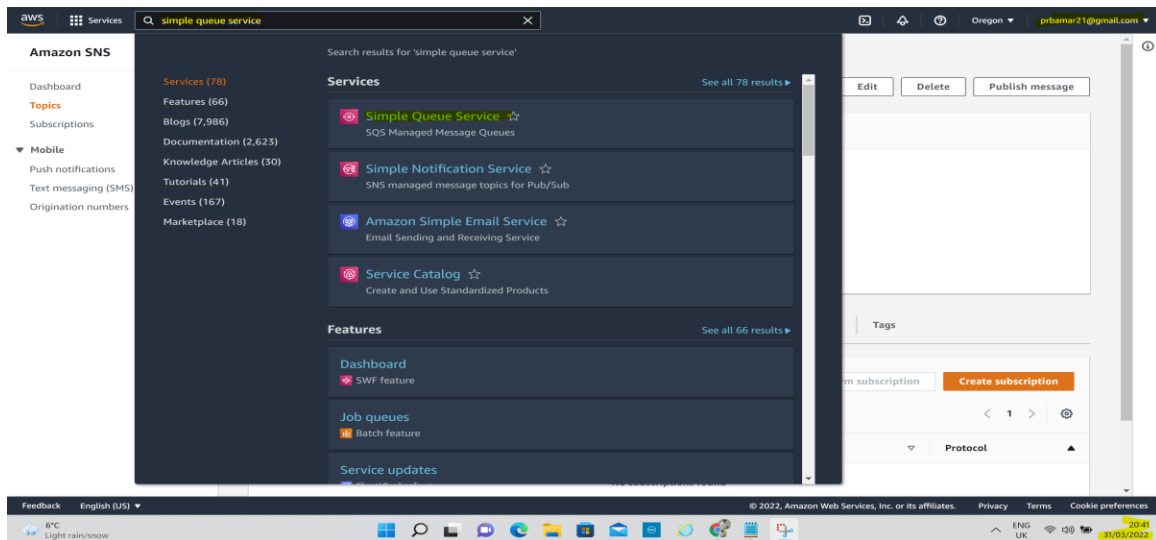


The Topic details page confirms the topic is successfully created.



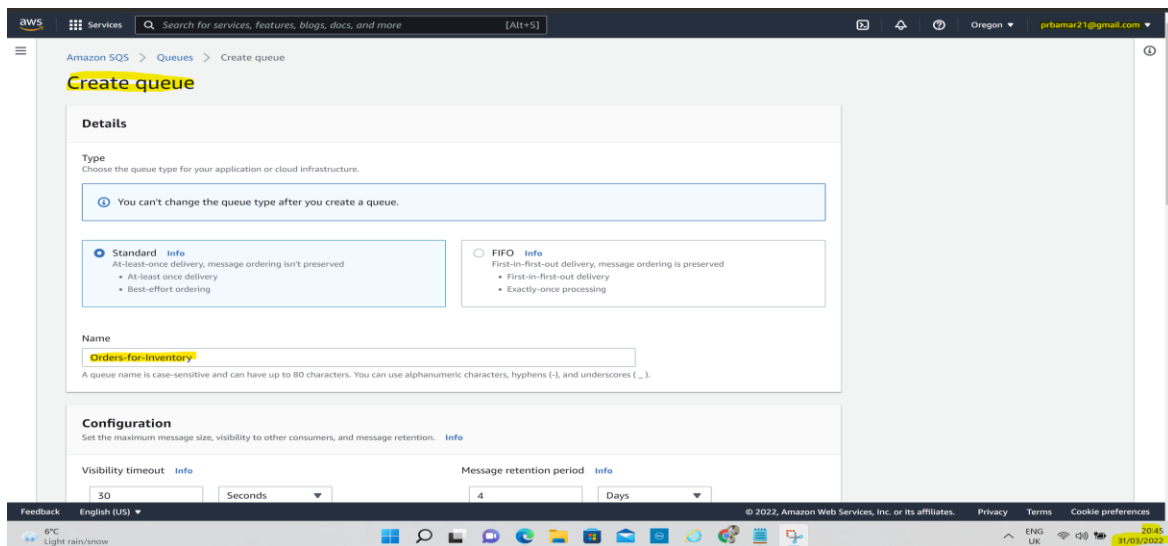
Phase 2: Create an Amazon SQS Queues

2a. When you go to AWS Management Console when the screen loads, in search bar and select Simple Queue Service to open the service console.

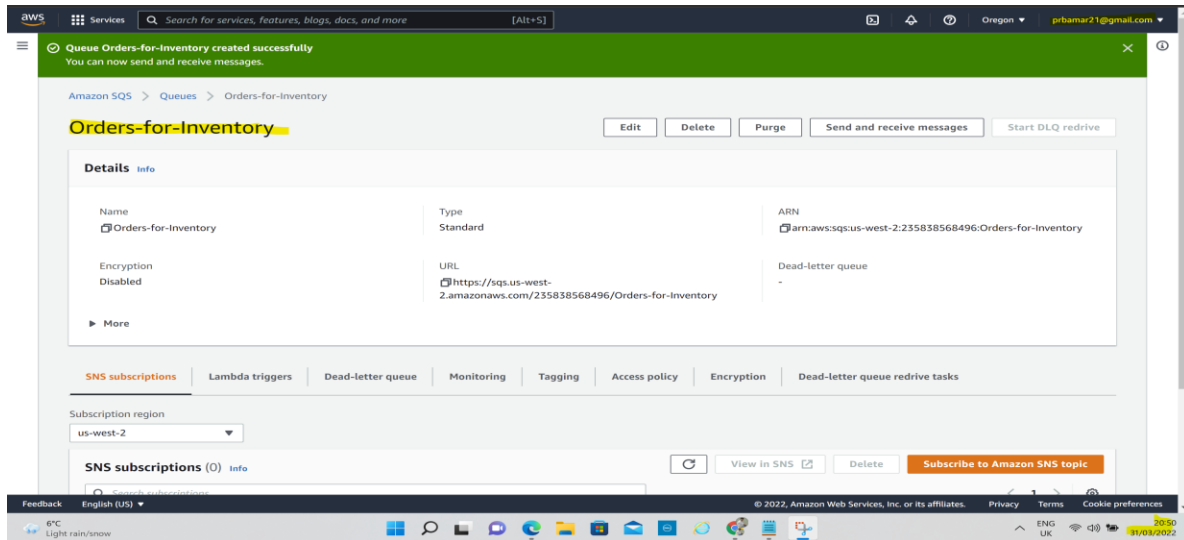


2b. On the Create New Queue page, enter **Orders-for-Inventory** in the Queue Name field. Leave Standard Queue selected, and click Quick-Create Queue.

We can change values in other fields like configuration, Access policy depending upon uses cases and requirement, here we are using default values

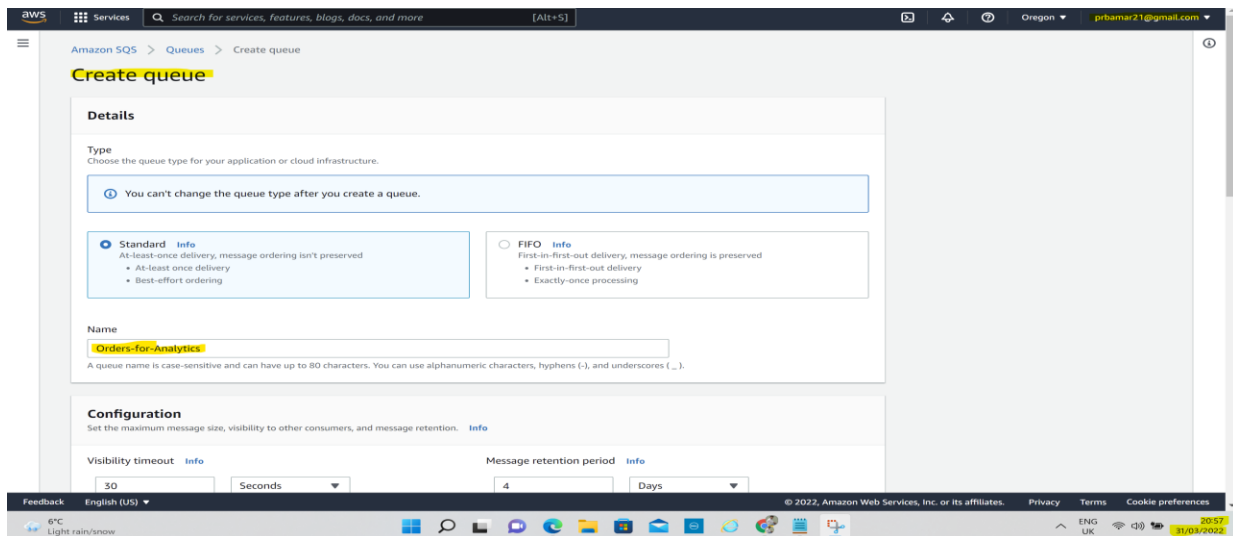


Orders-for-Inventory queue created this will store orders for a fictional Inventory Service that keeps track of products, adding and deleting them as needed from inventory with each order



2c. On the Create New Queue page, enter **Orders-for-Analytics** in the Queue Name field. Leave Standard Queue selected, and click Quick-Crete Queue.

We can change values in other fields like configuration, Access policy depending upon uses cases and requirement, here we are using default values



Orders-for-Analytics queue created to handle order analytics.

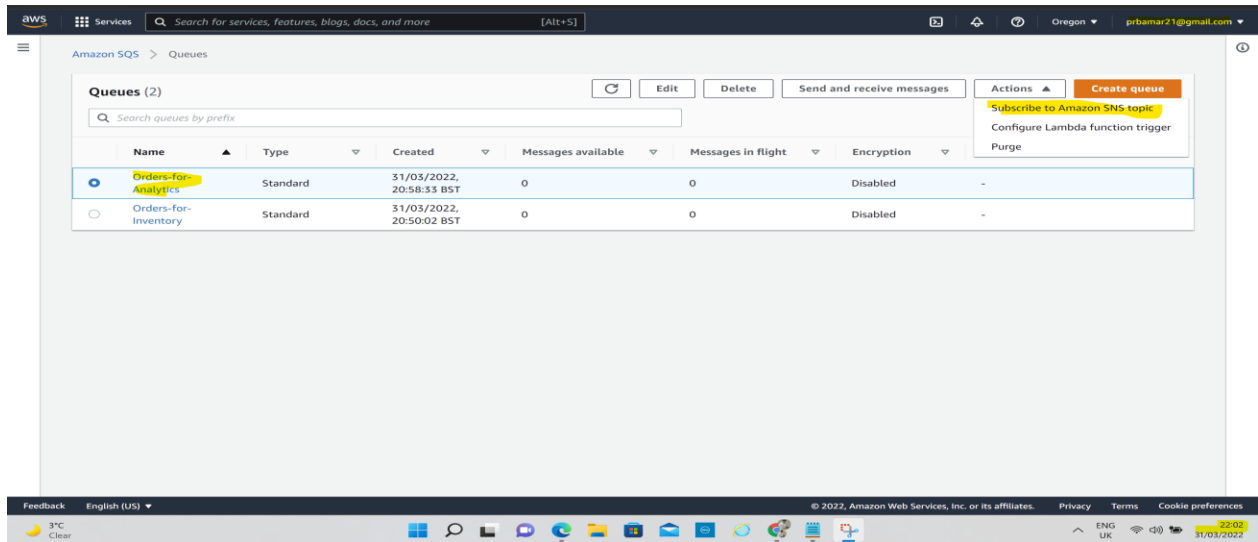
The first screenshot shows the 'Orders-for-Analytics' queue details in the AWS Management Console. The queue is of type 'Standard' and is located in the 'us-west-2' region. The URL is 'https://sqs.us-west-2.amazonaws.com/235838568496/Orders-for-Analytics'. The dead-letter queue is set to '-'. The queue is currently empty.

The second screenshot shows the 'Queues' list in the AWS Management Console. There are two queues listed: 'Orders-for-Analytics' and 'Orders-for-Inventory'. Both are of type 'Standard' and were created on 31/03/2022. Both have 0 messages available and 0 messages in flight. Both have encryption disabled and content-based deduplication disabled.

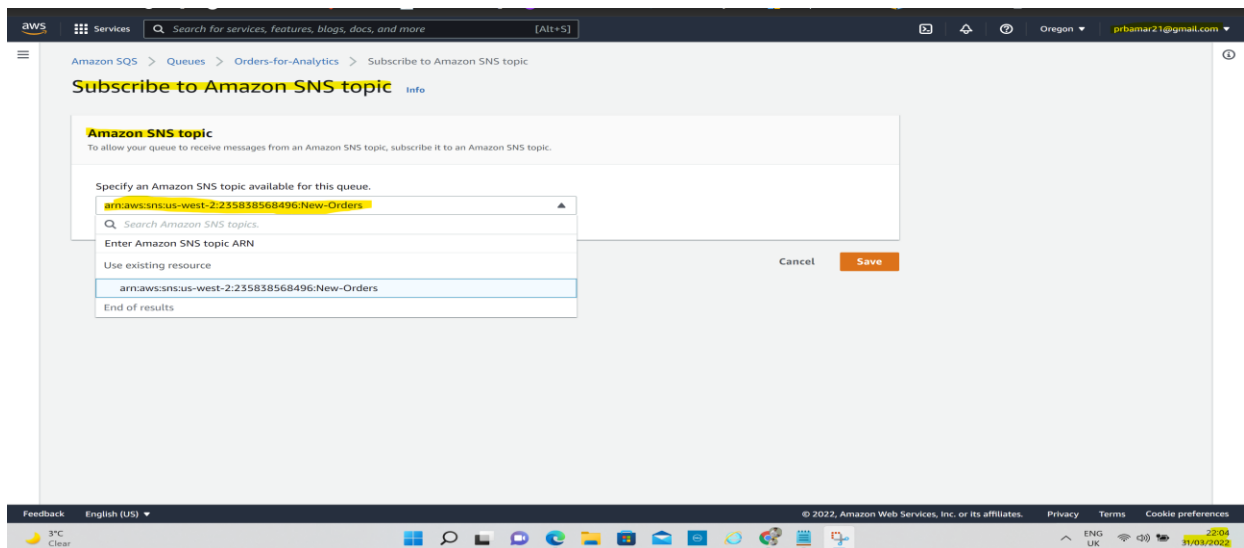
Name	Type	Created	Messages available	Messages in flight	Encryption	Content-based deduplication
Orders-for-Analytics	Standard	31/03/2022, 20:58:33 BST	0	0	Disabled	-
Orders-for-Inventory	Standard	31/03/2022, 20:50:02 BST	0	0	Disabled	-

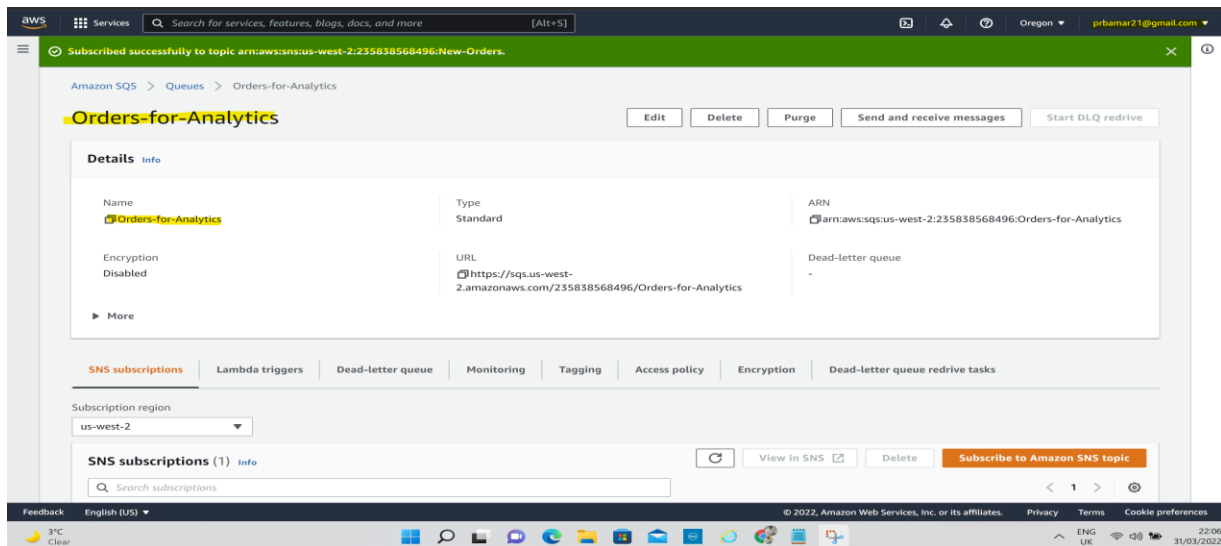
Phase 3: Subscribe the Queues to the topic

3a. From the list of queues, select the Orders-for-Inventory and Orders-for-Analytics queues. From Queue Actions, select Subscribe Queues to SNS Topic.

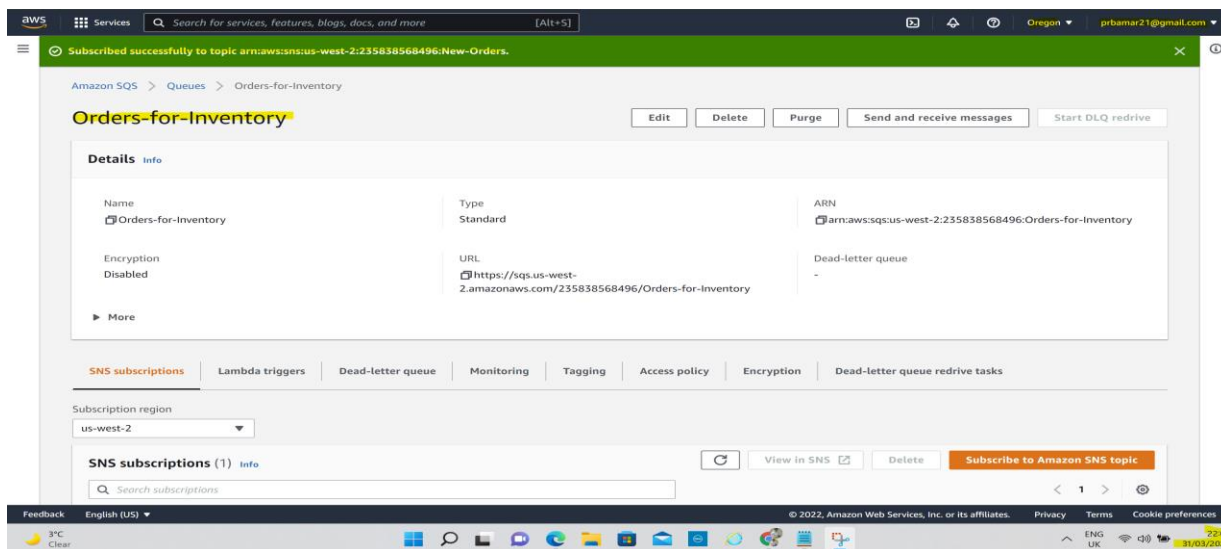


3b. The Subscribe to a Topic dialog box is displayed. From the Choose a Topic drop-down list, select your **New-Orders** Amazon SNS topic.

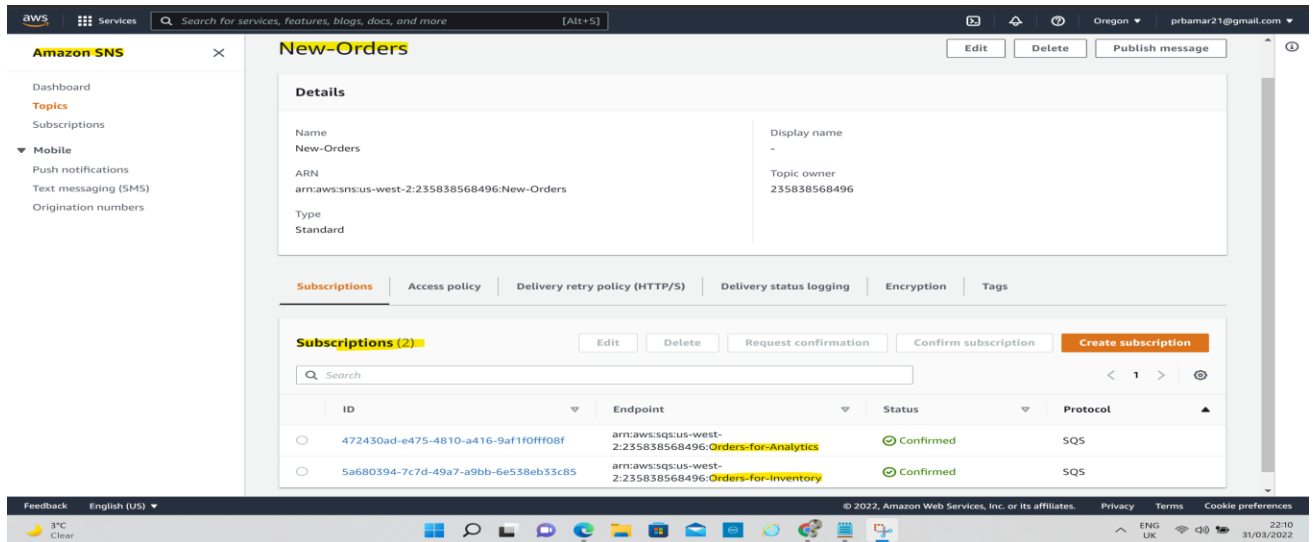




3c.Repeat 3b step for Orders-for-Inventory

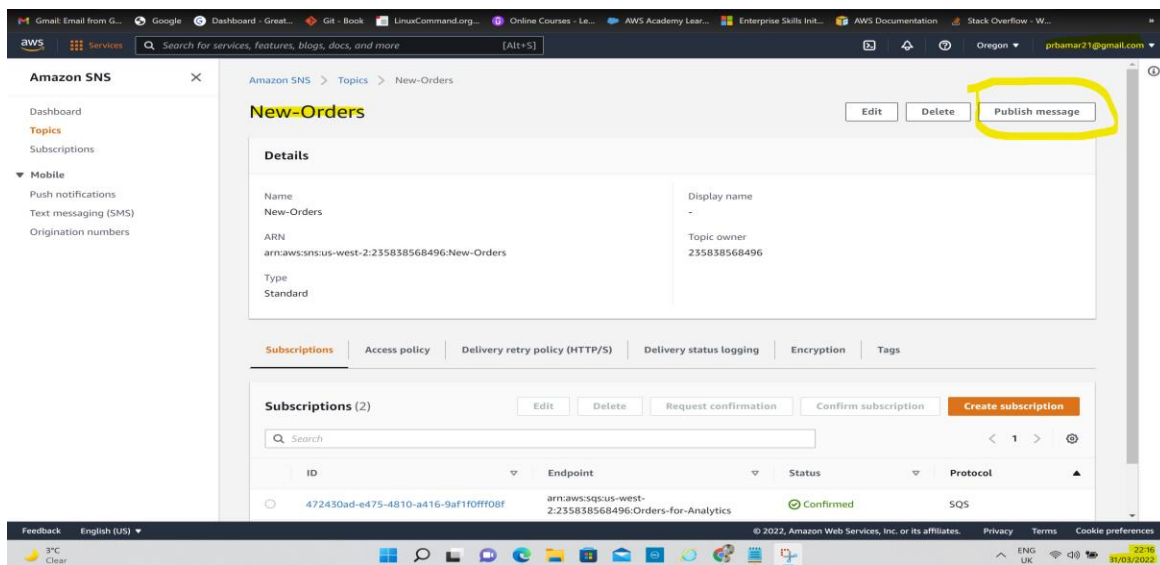


We can check subscription under SNS topic New-Orders



Phase 4: Publish message to the topic

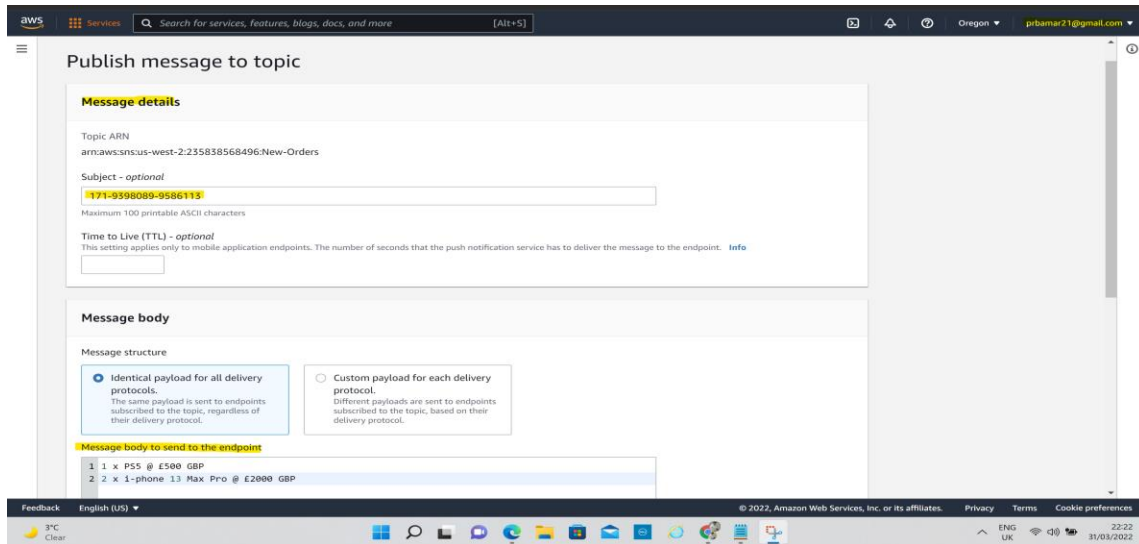
4a. In the Amazon SNS console New Orders topic details page, click Publish message.



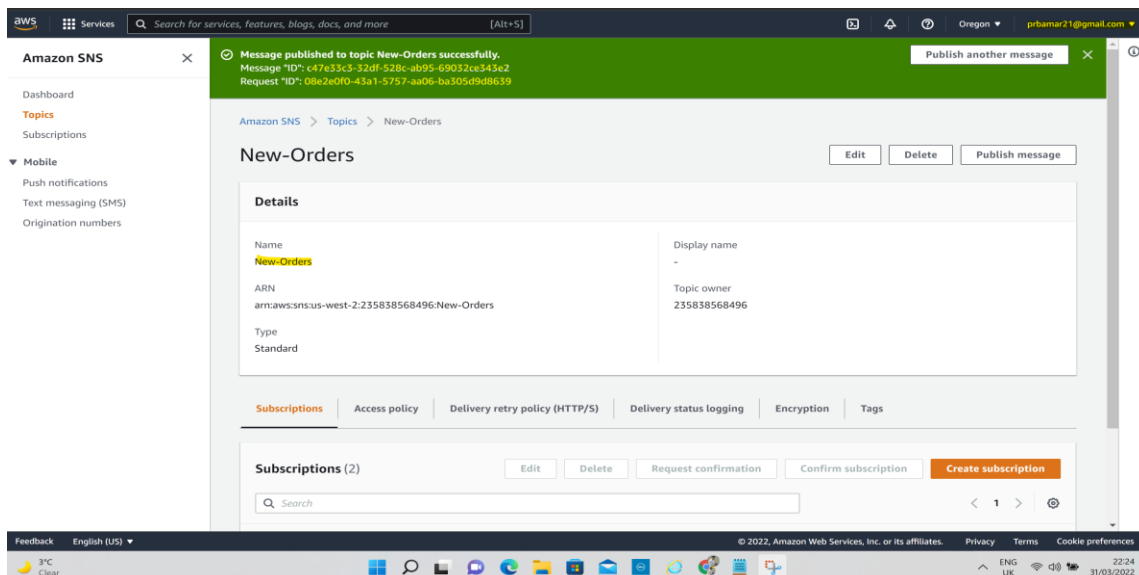
4b. Publish Message to topic page appears. In the Subject box, type Order 171-9398089-9586113. In the Message field, enter the following text to represent a sample order:

1 x PS5 @ £500 GBP

2 x I-phone 13 Max Pro @ £2000 GBP

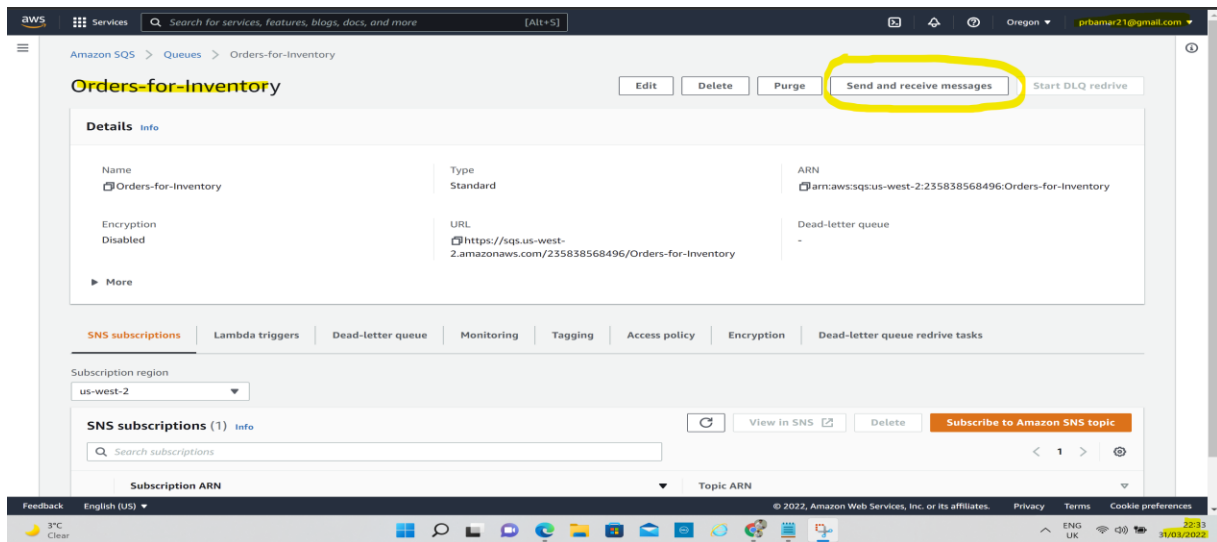


Once you click on Publish Message, confirmation dialog box will appear.

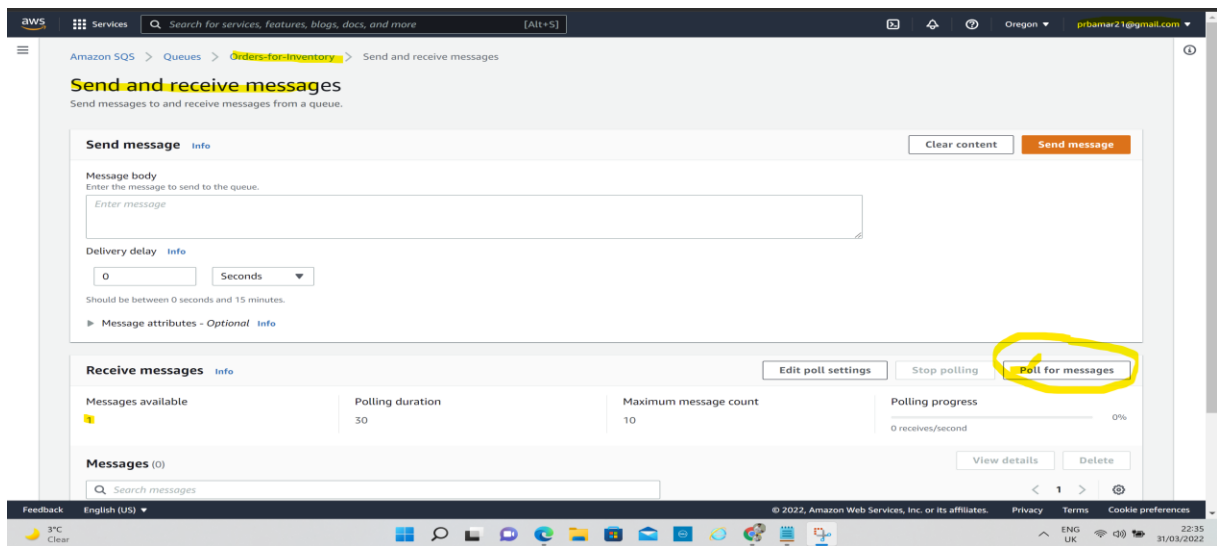


Phase 5: Verify the subscriptions

5a. In the Amazon SQS console, check the box for the Orders-for-Inventory queue from the queue list, then select Send and receive messages



5b. Click Start Poll for Messages.



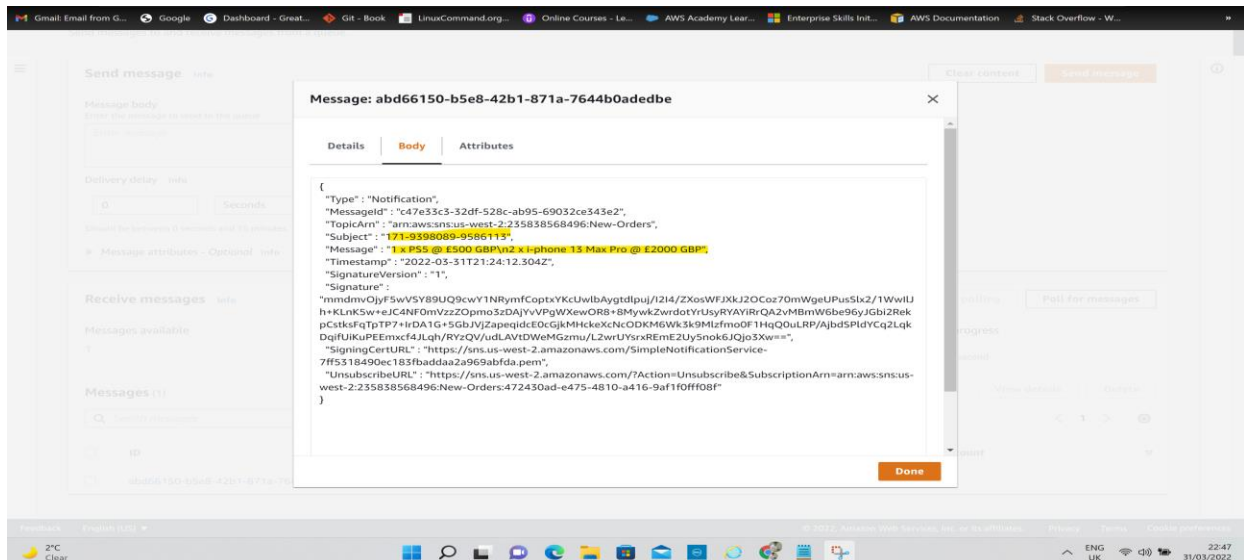
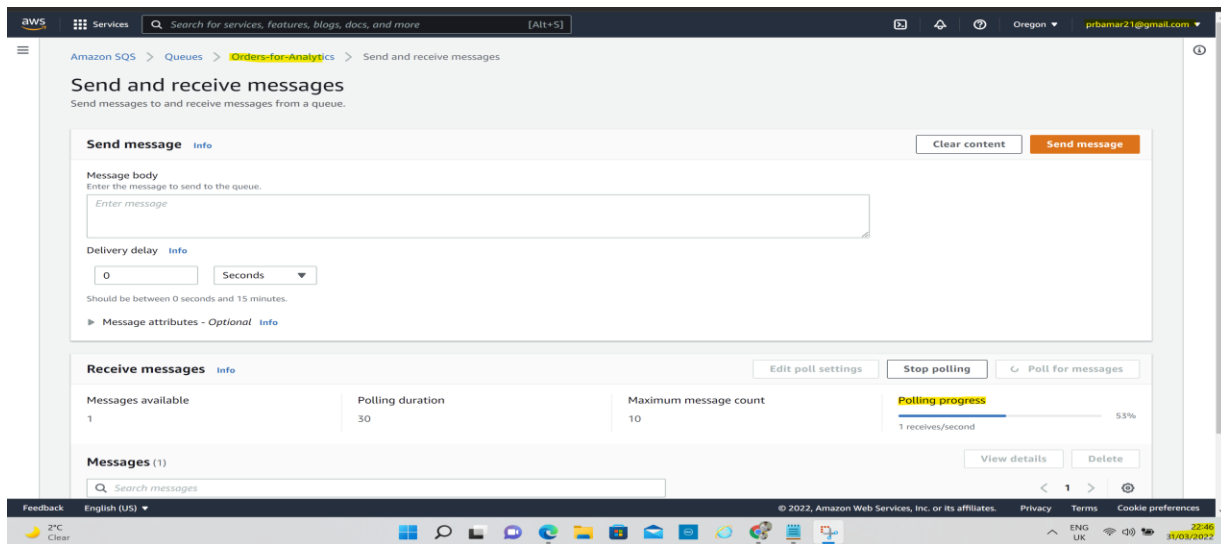
Once polling progress is completed status can be seen as green

The screenshot shows the AWS SNS console interface. The 'Send message' section is at the top, with a 'Message body' input field and a 'Delivery delay' dropdown set to '0' seconds. Below this is the 'Receive messages' section, which includes a 'Polling progress' indicator circled in yellow, showing '1 receives/second'. The 'Messages (1)' table below lists a single message with ID 'a2e4746d-5867-41f6-9438-1c9f5a5004d6', sent on 31/03/2022 at 22:24:12 BST, with a size of 998 bytes and a receive count of 1.

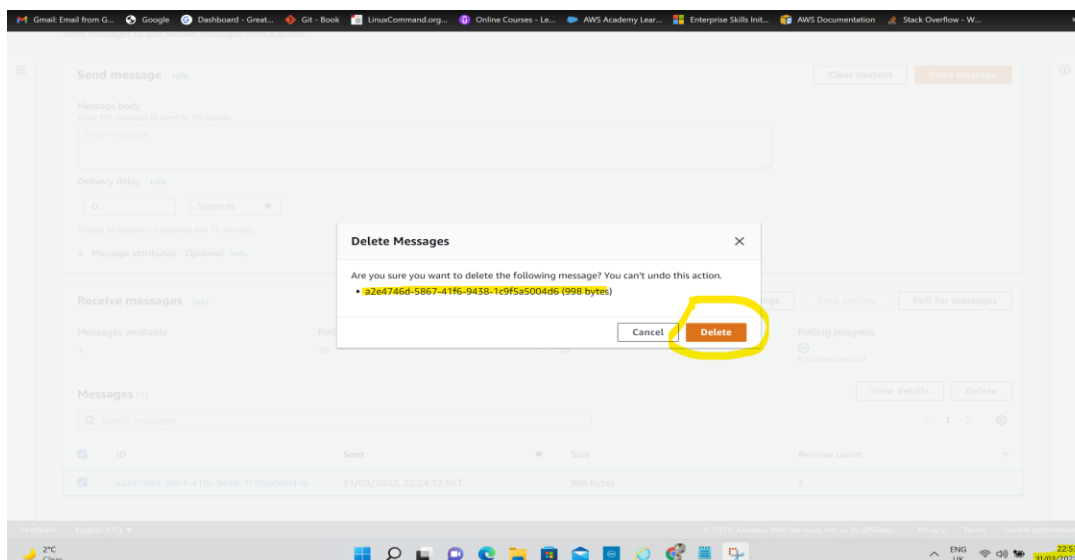
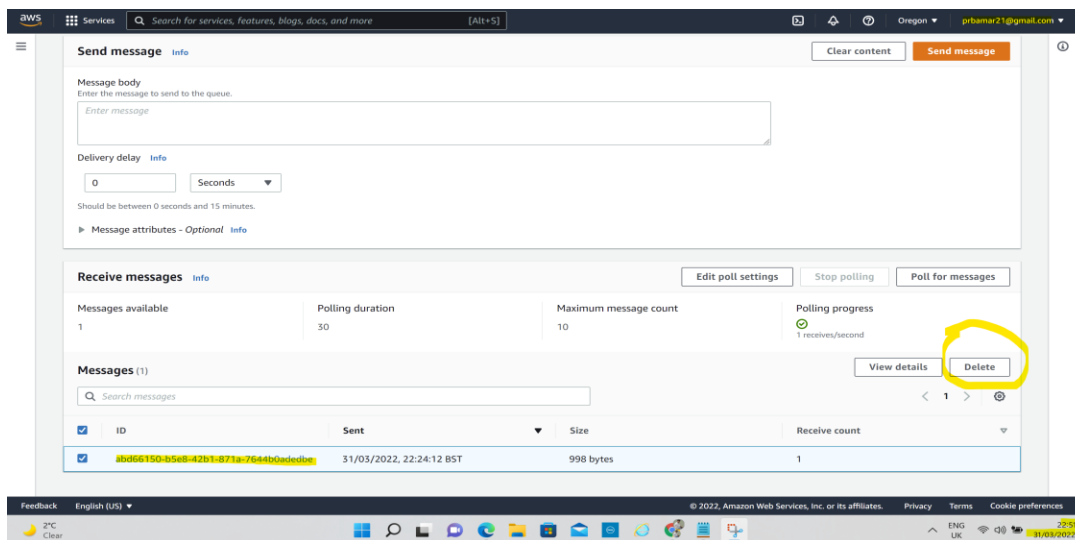
5c. View the message for more details like Body , details & attributes

The screenshot shows the AWS SNS console with a modal window open for the message 'a2e4746d-5867-41f6-9438-1c9f5a5004d6'. The 'Body' tab is selected, displaying a JSON notification payload. The payload includes fields such as 'Type', 'MessageId', 'TopicArn', 'Subject', 'Message', 'Timestamp', 'SignatureVersion', and 'Signature'. The 'Subject' field contains the text 'iPhone 13 Max Pro @ £2000 GBP', and the 'Message' field contains a detailed description of the product and its price.

5d. Repeat Steps 5a, 5b & 5c on Orders-for-Analytics queue.



5e. Once messages are processed successfully, then delete message from queues.



Cost Analysis

- There are no upfront fees using Amazon SNS, you only pay for what you use depending type of SNS topics used standard or FIFO. Billing will be calculated at the end of the month of your usage.
- First 1 million Amazon SNS requests per month are free, \$0.50 per 1 million requests thereafter. Here 0 cost for us.
- With Free tier account No charge for deliveries to SQS Queues
- AWS Free Tier includes 1 million requests with Amazon Simple Queue Service (SQS).
- Both SNS and SQS services are managed by Amazon so no maintenance required.

Lessons & Observations

- As we are using updated Amazon console, few options have changed
- Learned about SNS topic, types standard & FIFO, pricing.
- Learned about SQS topic, Pricing, subscription to the topic, polling messages.