

Session 1 : How Simple Queue Service Works

Session2 : Important points of SQS and Billing

- SQS is a pull service and SNS is push service
- SQS is a fast, reliable, fully managed message queue service
- it is a webservice that give us access to message queues that store messages waiting to be processed
- It offers a reliable, highly scalable hosted queue for storing messages between servers
- It allows the decoupling of application components such that a failure in one components does not cause a bigger problem to application functionality (like a coupled app)
- Using SQS, we no longer need a highly available message cluster or the burden of running it
- We can delete all the messages in an SQS queue without deleting the SQS queue itself
- We can use application on ec2 instances to read and process the SQS queue messages
- We can use auto scaling to scale ec2 fleet processing the SQS messages, as the queue size increases
- These applications on ec2 instances can process SQS messages/jobs then post the results to other Queues to other AWS services

AWS Queue Types :

1. Standard Queue

- High (unlimited) throughput
- At least one delivery
- Duplicacy is possible
- Best effort ordering

2. FIFO Queue

- Limited throughput (300 TPS)
- Exactly one processing
- Duplicacy not possible
- Strict ordering - First in First out
- FIFO queues are limited to 300 transactions per second (TPS), but have all the capabilities of standard queue

SQS Pricing :

- The first 1 million monthly requests are free. After that pricing is according to regions EX : In Mumbai region Standard Queue - \$0.40/million request..... FIFO Queue : \$0.50/million request

How Amazon SQS Charges :

- API action : Every Amazon SQS action counts as a request
- FIFO Request : API actions for sending, receiving, deleting and changing visibility of messages from FIFO Queues are charged at FIFO rates
- Contents of Request : A single request can have from 1 to 10 messages, up to a max total payload of 256KB
- Size of Payload : Each 64KB chunk of a payload is billed as 1 request (EX : API action with a 256KB payload is billed as 1 request)
- Interaction with Amazon S3
- Interaction with AWS KMS

Session 3 : Receive Message wait Time, Delivery Delay, Visibility timeout and Dead letter Queue

Short Polling :

- A request is returned immediately even if the queue is empty
- It does not wait for messages to appear in the queue
- It queries only a subset of the available servers for messages(based on weighted random distribution)
- Default by SQS
- Receive message time is set to 0
- More requests are used which implies higher cost

Long Polling :

- Is preferred to regular/short polling. It uses fewer requests and reduce cost by :
 - Eliminating false empty responses by querying all the servers
 - Reduce the number of empty responses by allowing amazon SQS to wait until a message is available in the queue before sending a response unless the connection timeout (20 sec)
 - Receive message time is set to a non-zero value(max 20 sec)
 - Polling is same for both pollings

SQS-Retention Period :

- SQS messages can remain in the queue for upto 14 days(SQS retention period)
- Range is 1 min to 14 days(default is 4 days)
- Once the max retention period of a message is reached, it will be deleted automatically from the queue
- Messages can be sent to the queue and read from the queue simultaneously
- SQS can be used with DynamoDB, EC2, ECS, Redshift, RDS, Lambda, S3 to make distributed/-decoupled applications
- We can have multiple queues with diff priorities

SQS-Visibility Timeout :

- Is the duration of time a message is locked for read by other servers
- Max is 12 hours and default is 30 sec
- A server that read a message to process, it can change the message visibility timeout if it needs more time to process the message
- After a message is read, there are the following possibilities :
 - An ACK is received that a message is processed, so it must be deleted from the queue to avoid duplicates
 - If a fail is received or the visibility timeout expires, the message will then be unlocked for read, such that it can be read and processed by another servers

Delivery Delay :

- AWS SQS provides delivery delay options to postpone the delivery of new messages to a queue. If delivery delay is defined for a queue, any new messages will not be visible to the server for the duration of delay. The default(min) delay for a queue is 0 sec. The max is 15 Min

Receive Message Wait Time :

- The default time is 0 Sec. This is max amount of time that a long polling receive call will wait for a message to become available before returning an empty response(Max value is 20 Sec)

Dead Letter Queue :

- The main task of a dead letter queue is handling message failure. A dead letter queue lets us set aside and isolate messages that can't be processed correctly to determine why their processing didn't succeed
- Don't use a dead letter queue with a FIFO queue, if we don't want to break the exact order of

messages or operations

- DLQ must be of the same type as the source queue(standard or FIFO)

LAB :

Session 4 : SQS Queue Triggers on Lambda Function