

AWS SQS

▶ SQS: Simple Queue Service

AWS Queue refers to the **messaging services** provided by Amazon Web Services (AWS) for building scalable and decoupled applications.

AWS offers two main queue services:

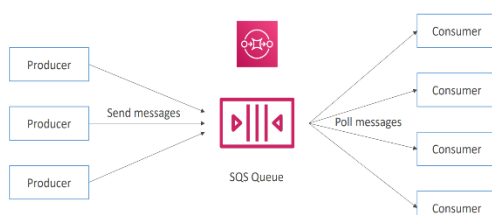
1. Amazon Simple Queue Service (SQS) &
2. Amazon Simple Notification Service (SNS).

Amazon Simple Queue Service (SQS):

- Amazon SQS is a fully managed message queuing service that enables decoupling of components within a distributed system.
- It provides a reliable and highly scalable way to exchange messages between various components of an application or different systems.

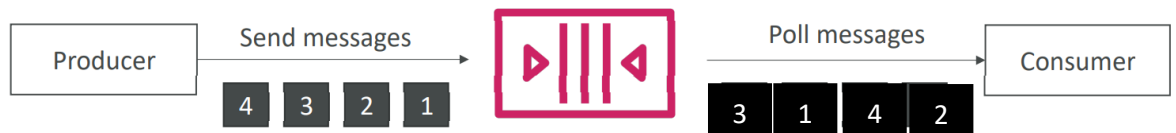
📌 Key features of Amazon SQS include:

- **Message durability:** Messages sent to SQS are stored redundantly across multiple Availability Zones, ensuring high durability.
- **Scalability:** SQS can handle any volume of messages and automatically scales to accommodate the load.
- **Message retention:** Messages can be stored in the queue for a configurable retention period. Up to 4 days to 14 days.
- **Message ordering:** SQS preserves the order of messages within a single queue or message group.
- **Dead-letter queues:** Failed or unprocessable messages can be automatically redirected to a dead-letter queue for further analysis.
- **Delayed delivery:** Messages can be delayed for a specified period before they become available for processing.



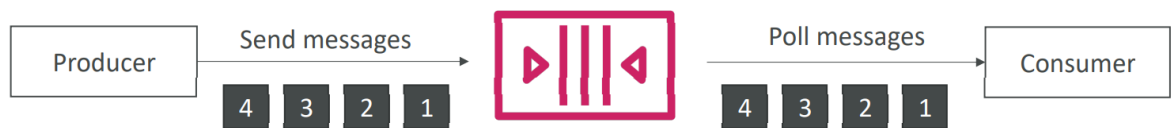
✓ In the context of message queuing systems, a standard queue and a FIFO (First-In-First-Out) queue are two different types of queues with distinct characteristics.

1. Standard queue:



It is a regular Queue in which Ordering is not ensured.

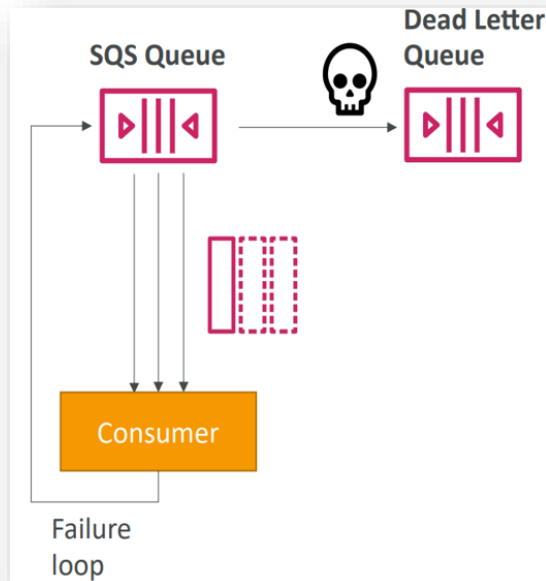
2. FIFO Queue:



It is a special type of Queue in which ordering is ensured.

Dead Letter Queue:

- The Dead Letter Queue (DLQ) in Amazon Simple Queue Service (SQS) is a feature that provides a mechanism to handle messages that cannot be successfully processed by a main queue.
- When a message fails to be processed or is deemed undeliverable after a certain number of retries, it is automatically moved to the DLQ for further analysis and troubleshooting.



- If a consumer fails to process a message within the Visibility Timeout... the message goes back to the queue!
- We can set a threshold of how many times a message can go back to the queue
- After the **MaximumReceives** threshold is exceeded, the message goes into a dead letter queue (DLQ)
- Useful for debugging!
- Make sure to process the messages in the DLQ before they expire:
 - Good to set a retention of 14 days in the DLQ

Difference between Standard Queue and FIFO Queue:

Standard Queue	FIFO Queue
1) It is a regular Queue in which Ordering is not Ensured.	1) It is a special type of Queue in which ordering is Ensured.
2) SQ does not have built in mechanism for msg De-duplication.	2) FIFO provides automatic De-duplication based on msg De-duplication ID.
3) SQ supports higher throughput compared to FIFO Queue.	3) FIFO has maximum throughput limit of 300 Transaction per sec(TPS).
4) SQ is suitable for scenario where strict ordering is not required and ordering of msg is not critical.	4) FIFO Queue ideal for use cases where strict ordering & De-duplication of msg is critical.

When comparing a standard queue and a FIFO (First-In-First-Out) queue, there are several key differences to consider:

Ordering:

Standard Queue: Does not provide any specific ordering guarantee. Messages can be processed in any order, depending on factors such as system resources or message priority.

FIFO Queue: Ensures strict ordering based on the order in which messages are sent. The first message sent is the first to be received and processed, preserving the exact sequence.

Message Deduplication:

Standard Queue: Does not have built-in mechanisms for message deduplication. Duplicate messages can potentially be processed multiple times.

FIFO Queue: Provides automatic deduplication based on message deduplication IDs. Duplicate messages with the same ID sent within a specific time window are processed only once.

Throughput Limit:

Standard Queue: Supports higher throughput compared to FIFO queues, allowing for a larger volume of messages per second for sending and receiving.

FIFO Queue: Has a maximum throughput limit of 300 transactions per second (TPS) for sending and receiving messages.

Use Cases:

Standard Queue: Suitable for scenarios where strict ordering is not required, and the order of message processing is not critical. Commonly used for load leveling, workload balancing, and general-purpose message processing.

FIFO Queue: Ideal for use cases where strict ordering and deduplication of messages are crucial, such as processing financial transactions, maintaining chronological order, or eliminating duplicate processing.