AWS Simple Queue Service

Amazon SQS is a reliable and highly-scalable managed message queue service for storing messages in transit between application components. There are two types: FIFO (First In First Out) and Standard Queue. FIFO queues complement the existing Amazon SQS standard queues, which offer high throughput, best-effort ordering, and at-least-once delivery. FIFO queues provide additional features that help prevent unintentional duplicates from being sent by message producers or from being received by message consumers. Additionally, message groups allow multiple separate ordered message streams within the same queue.

FIFO queues have essentially the same features as standard queues, but provide the added benefits of supporting ordering and exactly-once processing and ensure that the order in which messages are sent and received is strictly preserved.

Key differences

Message Order

- *Standard* queues provide **best-effort ordering** which ensures that messages are generally delivered in the same order as they are sent. Occasionally (because of the highly-distributed architecture that allows high throughput), more than one copy of a message might be delivered out of order.
- *FIFO* queues offer **first-in-first-out delivery** and exactly-once processing: the order in which messages are sent and received is strictly preserved.

Delivery

- *Standard* queues guarantee that a message is **delivered at least once** and duplicates can be introduced into the queue.
- *FIFO* queues ensure a message is **delivered exactly once** and remains available until a consumer processes and deletes it; duplicates are **not** introduced into the queue.

Transactions Per Second (TPS)

- *Standard* queues allow **nearly-unlimited** number of transactions per second.
- *FIFO* queues allow to process up to 3000 messages per second per API action.

Regions

- *Standard* queues are available in **all** the regions.

- *FIFO* queues are currently available in **limited** regions only.

SQS Buffered Asynchronous Client

- FIFO queues **aren't currently compatible** with the SQS Buffered Asynchronous Client, where messages are buffered at client side and send as a single request to the SQS queue to reduce cost.

AWS Services Supported

- Standard Queues are supported by all AWS services.
- FIFO Queues are currently **not supported** by all AWS services like: CloudWatch Events, S3 Event Notifications, SNS Topic Subscriptions, Auto Scaling Lifecycle Hooks, AWS IoT Rule Actions, AWS Lambda Dead Letter Queues.

Use Cases

*Choose **Standard** queues *if:*

- Standard queues can be used in any scenarios, as long as the application can process messages that arrive more than once and out of order.
- Decouple live user requests from intensive background work: Let users upload media while resizing or encoding it.
- Allocate tasks to multiple worker nodes: Process a high number of credit card validation requests.
- Batch messages for future processing: Schedule multiple entries to be added to a database.

*Choose **FIFO** queues *if:*

- FIFO queues are designed to enhance messaging between applications when the order of operations and events is critical, or where duplicates can't be tolerated.
- Ensure that user-entered commands are executed in the right order.
- Display the correct product price by sending price modifications in the right order.
- Prevent a student from enrolling in a course before registering for an account.