Amazon Simple Queue Services

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amazon web services

Amazon Simple Queue Service

Fully managed message queuing service

Transmit any volume of data, and at any level of throughput without losing messages

Consumers Pull messages by periodic polling

A message is intended for one consumer

Usage

- Decouple and Coordinate distributed components and micro services
- Consumer need not be always-on, available
- Decouple interactive components from backend components
- Batch messages for future processing
- Poison-pill and dead-letter queues

Types

Standard Queues – Maximum throughput, best effort ordering, and at-least-once delivery

FIFO Queues – Limited throughput, exact ordering, and exactly-once processing

Table: Comparison of SQS Queue Types

Features

- Redundant Infrastructure
- Multiple producers and consumers
- Customize Queue
- Variable message size up-to 256KB in size
- Access Control
- Delay Queues
- PCI Compliance

Demo

- SQS CLI
- Management Console

Demo – Standard Queue

- Create Standard Queue
- Send messages
- Receive messages
- Multiple consumers with inflight messages
- Reprocess messages by different consumer
- Max Receive Size to control number of messages to receive or send

Demo – FIFO Queue

- Create FIFO Queue with .fifo suffix
- Send message with one message group
- Receive message
- One consumer per message group with inflight messages
- Deduplication

Standard Queue Concepts

At-Least-Once Delivery

- On rare occasions, you might receive duplicate messages with Standard Queues
- Design your application to handle duplicate messages

Figure: Sampling

FIFO Queue Concepts

Exactly-Once Processing

- No duplicate messages sent to receivers

Deduplication

- Helps you avoid sending duplicate messages during 5-minute interval
- Content based Deduplication ID or Producer provided Deduplication ID

FIFO Queue Concepts

Message Group ID

- Ordering is preserved within a message group
- Multiple message groups within a single FIFO Queue
- Only one consumer can have an inflight message in a message group
- Multiple consumers can access messages in different message groups – one consumer per message group
- Improve throughput and latency

Concepts

Short polling & Long polling

Visibility Timeout & Message Lifecycle

Dead Letter Queues

Delay Queues

Retention – default 4 days up-to a maximum of 14 days

Demo – Long Polling

- Update Queue to support Long polling
- Wait until message is available or timeout
- Max timeout value is 20 seconds
- Timeout of 0 seconds is default and is known as short pooling
- Enable long poling at queue or individual call level

Demo – FIFO with multiple message groups

- Multiple messages
- Two different message groups
- Process each message group concurrently
- Max number of message – SQS attempts to maximize concurrency by returning messages from one message group

Limits

- Queue Name
- Inflight Messages
- Message Content

Monitoring

SQS Dimension & Metrics

Server Side Encryption

- Optionally encrypt messages using SSE – encrypted queues
- To secure Data-In-Transit use HTTPS and Authentication Information using Signature Version 4

Pricing

SQS Pricing

- Number of Requests
- Data Transfer In – Free, Out – Charged
- 64 KB chunk is billed as 1 request. 256 KB message is billed as 4 requests