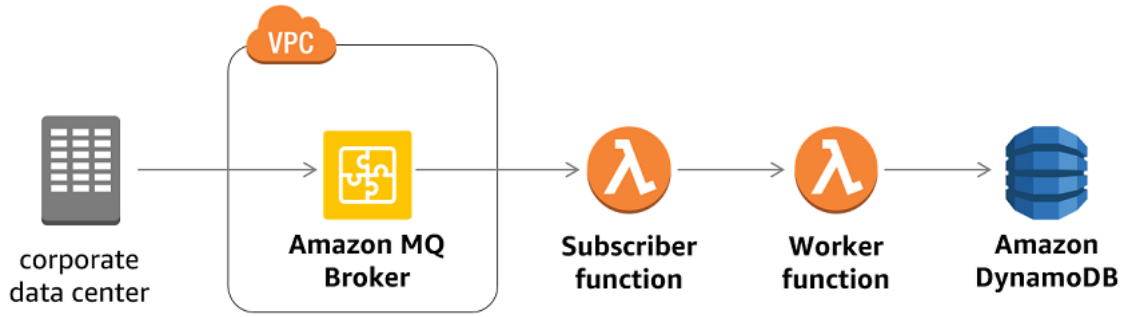
Amazon MQ

- **Amazon MQ** is a managed message broker service for Apache ActiveMQ that makes it easy to set up and operate message brokers in the cloud.
- Connecting your current applications to Amazon MQ is easy because it uses industry-standard APIs and protocols for messaging, including JMS, NMS, AMQP, STOMP, MQTT, and WebSocket.
- Using standards means that in most cases, there's no need to rewrite any messaging code when you migrate to AWS.

- Amazon MQ, Amazon SQS, and Amazon SNS are messaging services that are suitable for anyone from startups to enterprises.
- If you're using messaging with existing applications and want to move your messaging service to the cloud quickly and easily, it is recommended that you consider Amazon MQ.
- It supports industry-standard APIs and protocols so you can switch from any standards-based message broker to Amazon MQ without rewriting the messaging code in your applications.



- If you are building brand new applications in the cloud, then it is highly recommended that you consider Amazon SQS and Amazon SNS.
- Amazon SQS and SNS are lightweight, fully managed message queue and topic services that scale almost infinitely and provide simple, easy-to-use APIs.
- You can use Amazon SQS and SNS to decouple and scale microservices, distributed systems, and serverless applications, and improve reliability.

References:

https://amazon-mq-intro.workshop.aws/amqintro/amqintro-step-1.html

https://aws.amazon.com/amazon-mq/

https://aws.amazon.com/messaging/

https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/welcome.html#sqs-difference-from-amazon-mq-sns

Check out this Amazon MQ Cheat Sheet:

https://tutorialsdojo.com/aws-cheat-sheet-amazon-mq/

SQS - Simple Queue Service

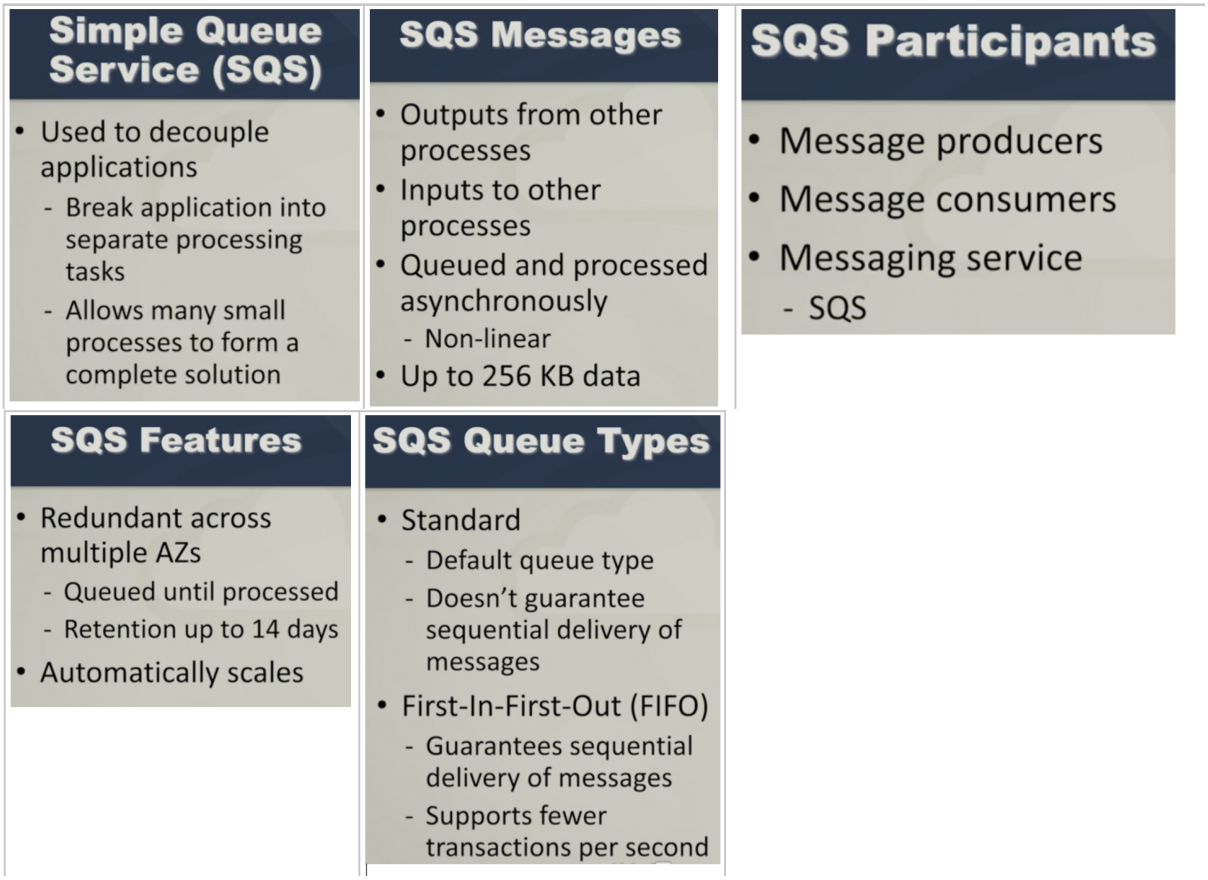
https://aws.amazon.com/sqs/

Best Practices
https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqs-best-practices.html

SQS Cheat Sheet
https://tutorialsdojo.com/aws-cheat-sheet-amazon-sqs/

- **Amazon Simple Queue Service (SQS)** is a fully managed message queuing service that makes it easy to decouple and scale microservices, distributed systems, and serverless applications.
- Building applications from individual components that each perform a discrete function improves scalability and reliability, and is best practice design for modern applications.
- SQS makes it simple and cost-effective to decouple and coordinate the components of a cloud application.
- Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be always available.

- In Amazon SQS, you can configure the message RETENTION period to a value from 1 minute to 14 days. The default is 4 days.
- Once the message retention limit is reached, your messages are automatically deleted.
- A single Amazon SQS message queue can contain an unlimited number of messages.
- However, there is a 120,000 limit for the number of inflight messages for a standard queue and 20,000 for a FIFO queue.
- Messages are inflight after they have been received from the queue by a consuming component, but have not yet been deleted from the queue.
- DELAY QUEUE = (default = 0, MAX = 15 mins) amount of time message is delayed to be make it available in SQS
- VISIBILITY TIME-OUT = (default=30 secs, min =0, max = 12 hours). Amount of time message is made invisible while the other consumer started processing.

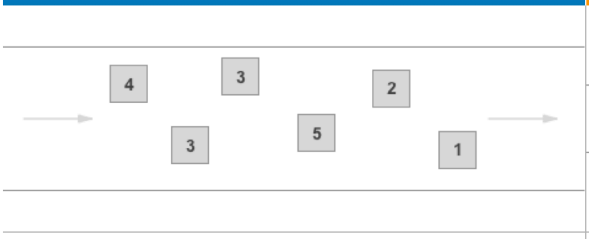


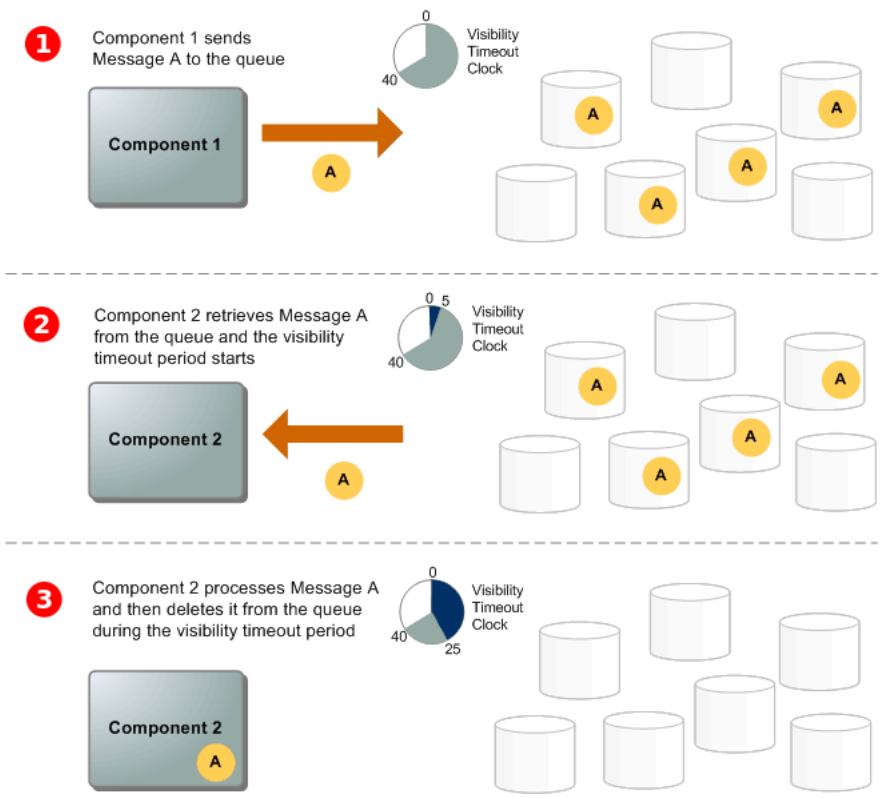
Amazon SQS - FIFO

- Amazon SQS FIFO (First-In-First-Out) Queues have all the capabilities of the standard queue with additional capabilities designed to enhance messaging between applications when the order of operations and events is critical, or where **duplicates can't be tolerated**,

  for example:

- - 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.

Standard Queue	FIFO Queue
	
Unlimited Throughput Supports a nearly unlimited number of transactions per second (TPS) per API action.	**High Throughput** By default, FIFO queues support up to 3,000 messages pe second (TPS), per API action through batching
At-Least-Once Delivery A message is delivered at least once. **Occasionally more than one copy of a message is delivered.**	**Exactly-Once Processing** A message is delivered once and remains available until a consumer processes and deletes it. **Duplicates are not introduced into the queue.**
Best-Effort Ordering Occasionally, messages might be delivered in an order different from which they were sent.	**First-In-First-Out Delivery** The order in which messages are sent and received is strict preserved.



References:

https://aws.amazon.com/swf/faqs/

https://aws.amazon.com/swf/

https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqs-visibility-timeout.html

Check out this Amazon SWF Cheat Sheet:

https://tutorialsdojo.com/amazon-simple-workflow-amazon-swf/

Amazon Simple Workflow (SWF) vs AWS Step Functions vs Amazon SQS:

https://tutorialsdojo.com/aws-cheat-sheet-amazon-simple-workflow-swf-vs-aws-step-functions-vs-amazon-sqs/