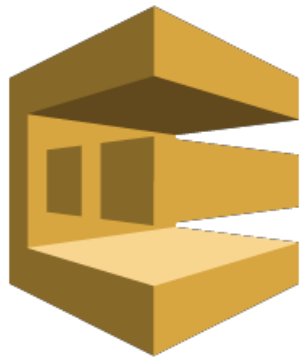# Amazon Simple Services

Simple Email Service (SES)

- Cost effective bulk email service

- Cost based on number of emails sent

- Outbound-only email-sending service

- Leverages Amazon email reputation

- Initially limited to 10,000 emails/day

Simple Queueing Service (SQS)

Amazon SQS

- Fast, reliable, and scalable
- Unlimited messages and queue size
- Payload up to 256KB
- Billed in chunks of 64KB payloads
- First 1 million requests are free
- $0.50 / million SQS requests

Simple Notification Service (SNS)

Push messaging service	HTTP/HTTPS	Email
Email-JSON	SMS	Amazon SQS queues

Summary

Simple Email Service

Simple Queuing Service

Simple Notification Service

Using AWS Messaging Services

Outline

- **Using AWS Messaging Services for Notifications and Integration**
- **Features of Simple Queue Service (SQS)**
- **Acting on SQS Queues using the Management Console**
- **Acting on SQS Queues using the API**
- **AWS for .NET - Acting on SQS Queues**
- **Features of Simple Notification Services (SNS)**
- **Creating and Publishing to SNS Topics using the Management Console**
- **Creating and Publishing to SNS Topics using the API**
- **AWS for .NET - Creating and Publishing to SNS Topics**
- **Summary**

- **Think of messaging as middleware options for sharing data between applications.**
- **The must-read book <u>Enterprise Integration Patterns </u>(2003, Hohpe, Woolf) describes messaging as:**
  - *Use <u>Messaging </u>to transfer packets of data frequently, immediately, reliably, and asynchronously, using customizable formats.*
- **AWS provides three services for messaging between AWS services, or ANY two applications.**
  - Simple Queue Service (SQS)
  - Simple Notification Service (SNS)
  - Simple Email Service (SES)

Features of Simple Queue Service (SQS)

- **SQS provides a highly available, scalable queue storage mechanism.**
- **Queues are great for moving data between applications without fear of losing it, or getting overwhelmed by variable load.**
- **Could use SQS for background work tasks, items for browsers to poll, and more.**
- **An individual queue is unlimited in size, but the individual text messages can only be 64kb.**
- **Considerations for this cloud-based queuing:**
  - Retrieved messages are "locked" while processing but locks expire
  - Queues or messages can be purposely delayed (hidden) for a time
  - Messages could be delivered more than once ("at least once delivery")
  - No guarantee of first-in-first-out (FIFO)
  - Queue messages may be distributed across machines, so "sampling" occurs and a request MAY not return all the possible messages.

Acting on SQS Queues using the Management

Console

- **Users of the AWS Management Console can create, configure and delete queues.**
- **Permissions (with conditions) can be added to queues.**
- **Messages can be sent, viewed and deleted from the Console.**
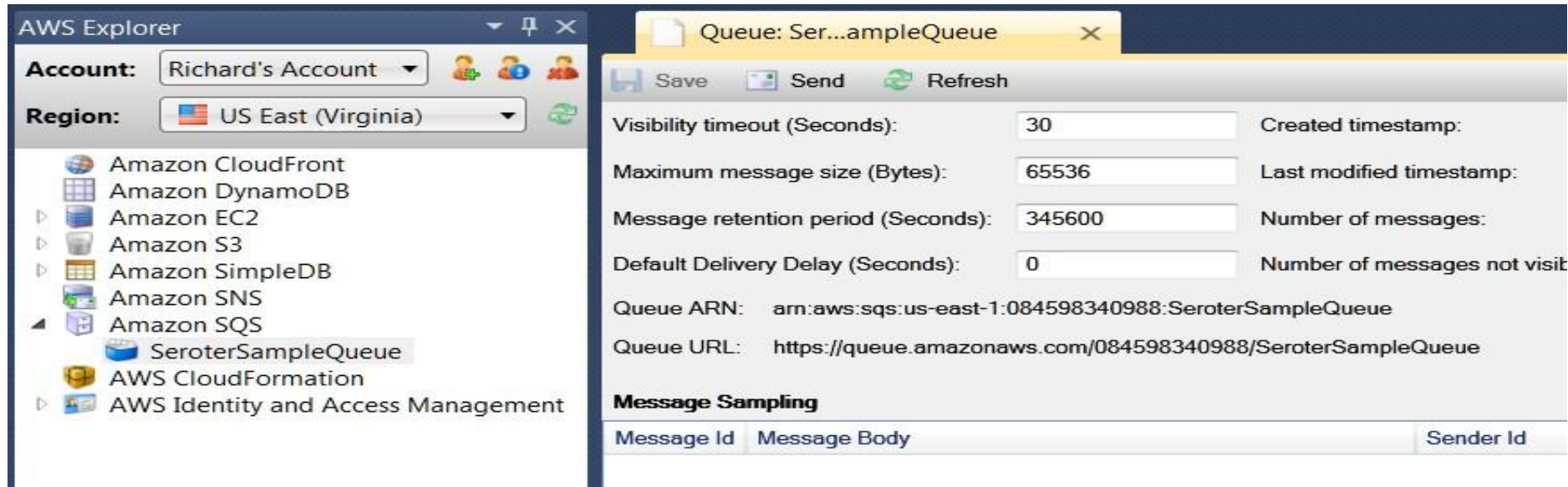
Acting on SQS Queues using the API

- **API is Query based, as SOAP support ended in 2011**
- **The available SQS operations center around sending messages, receiving messages and deleting messages.**
- **API users can:**
  - CreateQueue which creates a new queue with particular attributes.
  - AddPermission assigns a permission to a particular principal
  - SetQueueAttribute gives you the ability to set queue values like VisibiltyTimeout, Policy, MessageRetentionPeriod and more.
  - SendMessage sends an individual message to a queue.
  - SendMessageBatch lets you send up to 10 messages at once to a queue
  - ReceiveMessage pulls back up to 10 messages that were returned from the queue sampling operation.
  - DeleteMessage deletes the message with the given receipt handle (acquired when receiving a message)

- **The AWS Explorer is a full-featured tool for managing queues and interacting with queue messages.**
  - Users can create queues, send messages, receive messages and more.
- **The .NET API includes all of the objects needed to work with SQS solutions.**

- **SNS is a push-based message broadcasting service**
- **Could use this for application integration, time-sensitive information updates, or mobile app updates.**
- **Subscribers must "opt in" for each subscription.**
- **Create "topics" that can be subscribed to by various endpoints.**
  - HTTP
  - HTTPS
  - SMTP (text or JSON)
  - SMS
  - SQS
- **A particular topic has a policy attached which controls access rights and supported protocols.**
- **Subscribers receive a single message at a time, but must be aware that they could be out of order, or delivered more than once.**

- **Users of the Management Console can create and secure new topics, add subscriptions and monitor the status of subscriptions.**
- **Like the other service consoles, the SNS console allows users to interact with the service by publishing messages to a topic.**

- **SNS is relatively weakly documented and is still considered a beta product.**
- **The API is fairly straightforward and contains operations to:**
  - CreateTopic which creates a new topic with the given name.
  - AddPermission sets the topic's access control policy.
  - ListSubscriptions returns all the subscriptions for the caller.
  - ListSubscriptionsByTopic returns all the the subscriptions for the given topic.
  - Subscribe initiates the subscription by sending a confirmation message to the endpoint.
  - ConfirmSubscription is used to verify the consent of the subscriber.
  - Publish sends a subject and message body to all subscribers of a topic.

Topics

- **The AWS Explorer lets developers create/delete topics, set security policies, add subscriptions and publish messages.**
- **The .NET API contains all of the structured objects you need to interact with the topics and messages that make up an SNS solution.**
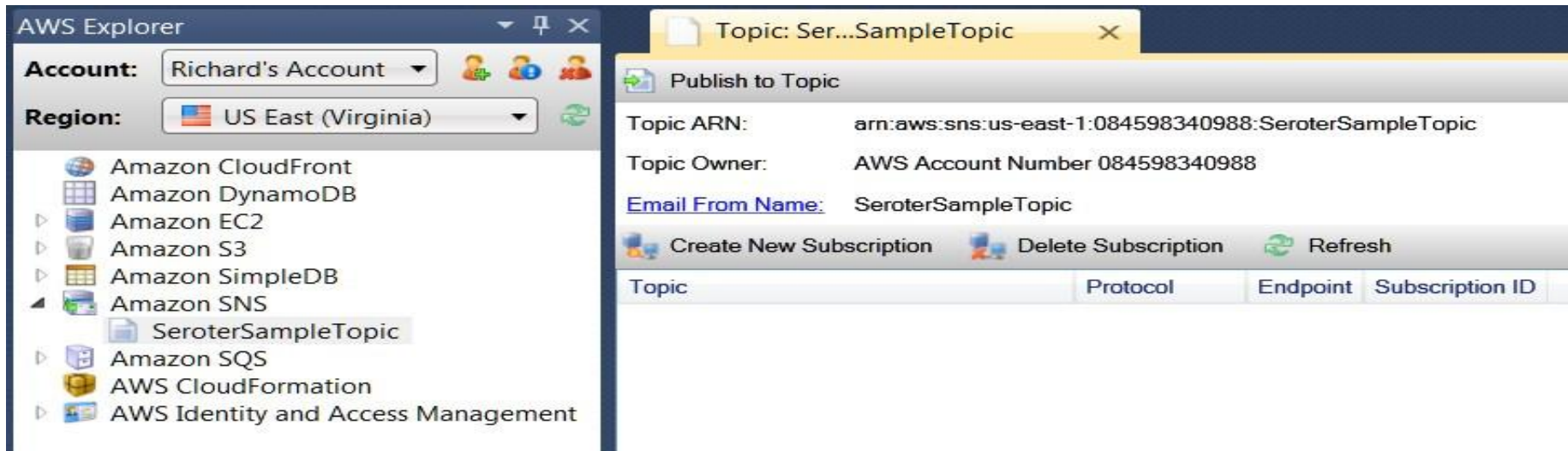
Summary

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