

AWS (Amazon Web Services)

Embedded Interface Design

with **Bruce Montgomery**



Learning Objectives

- Students will be able to...
 - Recognize the services provided by AWS
 - Understand standard AWS certifications
 - Consider the cost of the AWS services

AWS – Amazon Web Services

- Pros
 - Gartner = “safe choice”
 - Widest feature set
 - Largest, most mature
 - Thought leader
 - Widest third-party tools
- Cons
 - Easy to start, hard to master
 - Proprietary
 - High innovation rate = high change rate
 - Cost
- Reference [2], [3]



AWS Cloud Service Categories



Compute



Storage



Database



Migration



Networking & Content
Delivery



Developer Tools



Management Tools



Media Services



Security, Identity &
Compliance



Analytics



Machine Learning



Mobile Services



AR & VR



Application Integration



Customer Engagement



Business Productivity



Desktop & App Streaming



Internet of Things



Game Development

Reference [1]

AWS Console Service List



Security, Identity & Compliance

IAM
Cognito
Secrets Manager
GuardDuty
Inspector
Amazon Macie [↗](#)
AWS Single Sign-On
Certificate Manager
CloudHSM
Directory Service
WAF & Shield
Artifact



Machine Learning

Amazon SageMaker
Amazon Comprehend
AWS DeepLens
Amazon Lex
Machine Learning
Amazon Polly
Rekognition
Amazon Transcribe
Amazon Translate



Analytics

Athena
EMR
CloudSearch
Elasticsearch Service
Kinesis
QuickSight [↗](#)
Data Pipeline
AWS Glue



Compute

EC2
Lightsail [↗](#)
Elastic Container Service
EKS
Lambda
Batch
Elastic Beanstalk



Storage

S3
EFS
Glacier
Storage Gateway



Database

RDS
DynamoDB
ElastiCache
Neptune
Amazon Redshift



Migration

AWS Migration Hub
Application Discovery Service
Database Migration Service
Server Migration Service
Snowball



Management Tools

CloudWatch
AWS Auto Scaling
CloudFormation
CloudTrail
Config
OpsWorks
Service Catalog
Systems Manager
Trusted Advisor
Managed Services



Media Services

Elastic Transcoder
Kinesis Video Streams
MediaConvert
MediaLive
MediaPackage
MediaStore
MediaTailor



Mobile Services

Mobile Hub
AWS AppSync
Device Farm
Mobile Analytics



AR & VR

Amazon Sumerian



Application Integration

Step Functions
Amazon MQ
Simple Notification Service
Simple Queue Service
SWF



Customer Engagement

Amazon Connect
Pinpoint
Simple Email Service



Business Productivity

Alexa for Business
Amazon Chime [↗](#)
WorkDocs
WorkMail



Migration

AWS Migration Hub
Application Discovery Service
Database Migration Service
Server Migration Service
Snowball



Networking & Content Delivery

VPC
CloudFront
Route 53
API Gateway
Direct Connect



Developer Tools

CodeStar
CodeCommit
CodeBuild
CodeDeploy
CodePipeline
Cloud9
X-Ray



Business Productivity

Alexa for Business
Amazon Chime [↗](#)
WorkDocs
WorkMail



Desktop & App Streaming

WorkSpaces
AppStream 2.0



Internet of Things

IoT Core
IoT 1-Click
IoT Device Management
IoT Analytics
Greengrass
Amazon FreeRTOS
IoT Device Defender



Game Development

Amazon GameLift

Let's look at some of the tools...



AWS Console Solution How To's

Build a solution

Get started with simple wizards and automated workflows.



Launch a virtual machine

With EC2

~2-3 minutes



Build a web app

With Elastic Beanstalk

~6 minutes



Build using virtual servers

With Lightsail

~1-2 minutes



Connect an IoT device

With AWS IoT

~5 minutes



Start a development project

With CodeStar

~5 minutes



Register a domain

With Route 53

~3 minutes



Deploy a serverless microservice

With Lambda, API Gateway

~2 minutes



Create a backend for your mobile app

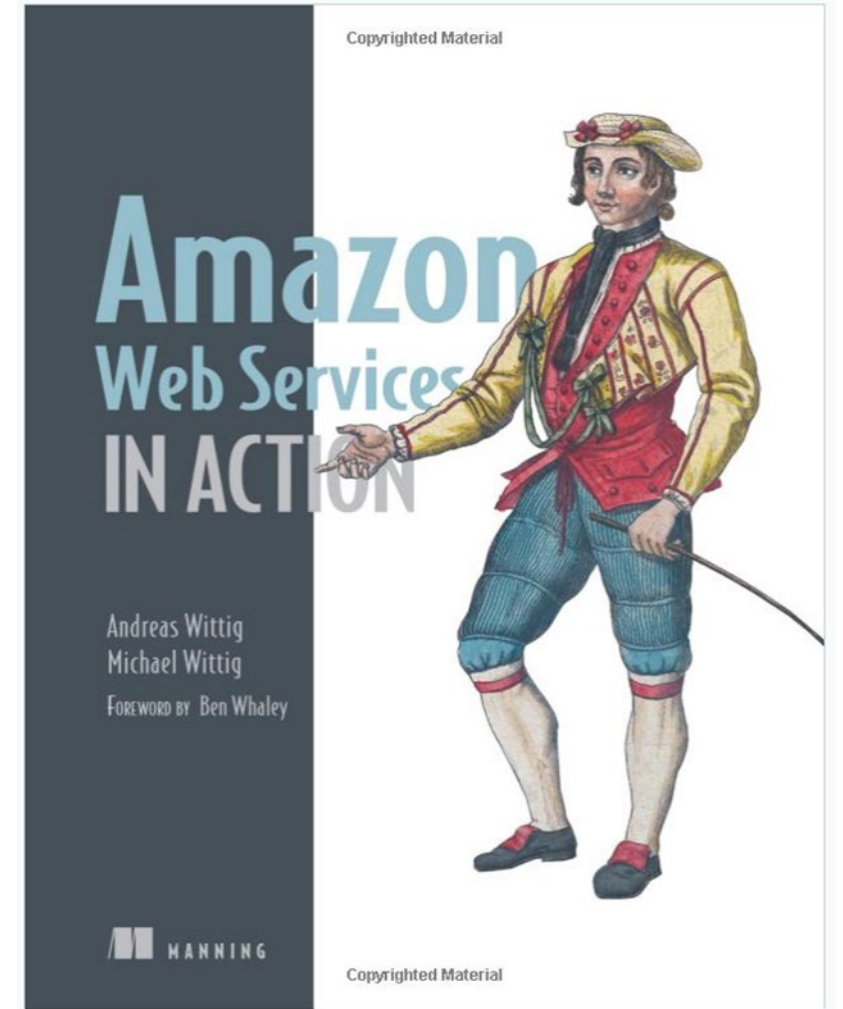
With Mobile Hub

~5 minutes

Standard Amazon Web Services

Wittig and Wittig (shown) reviews and shows examples of use of the more standard AWS services:

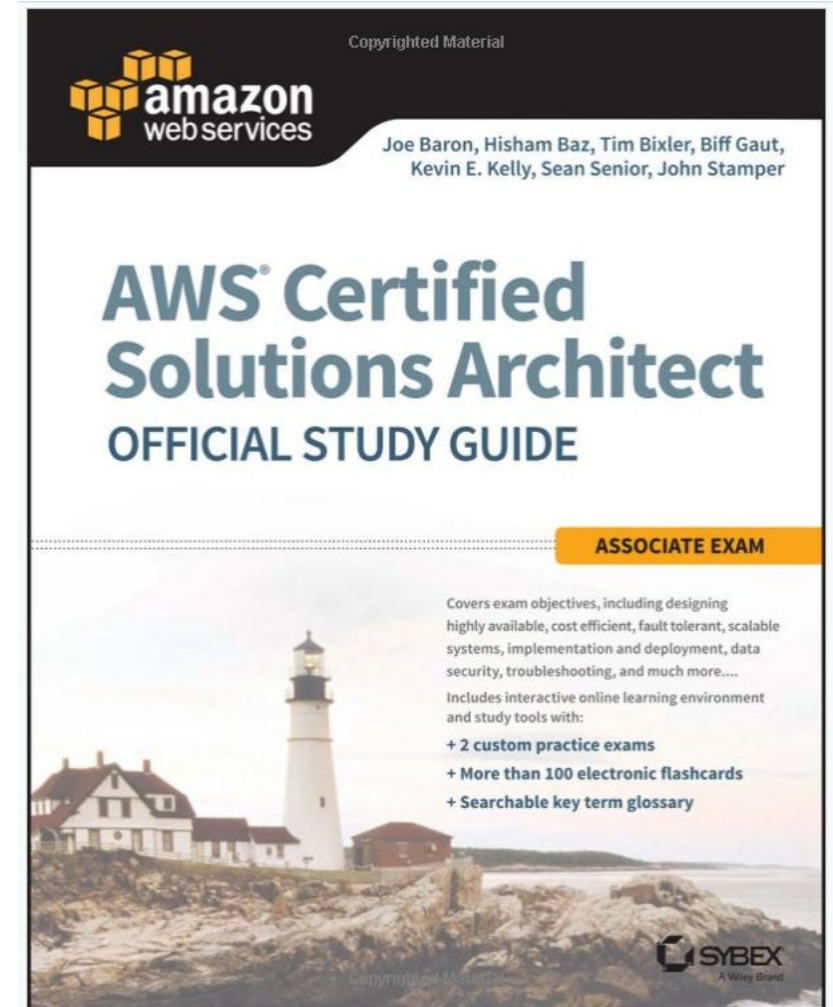
- EC2 for launching virtual machines
- CloudFormation for VM templates
- Elastic Beanstalk for web app deployment
- IAM for security
- S3 and Glacier for long- and longer-term data storage
- EBS connected data storage for EC2 VMs
- RDS for relational database instances
- DynamoDB for Amazon's NoSQL database
- CloudWatch for high availability, scaling, and monitoring
- ELB for load balancing
- SQS for message queuing



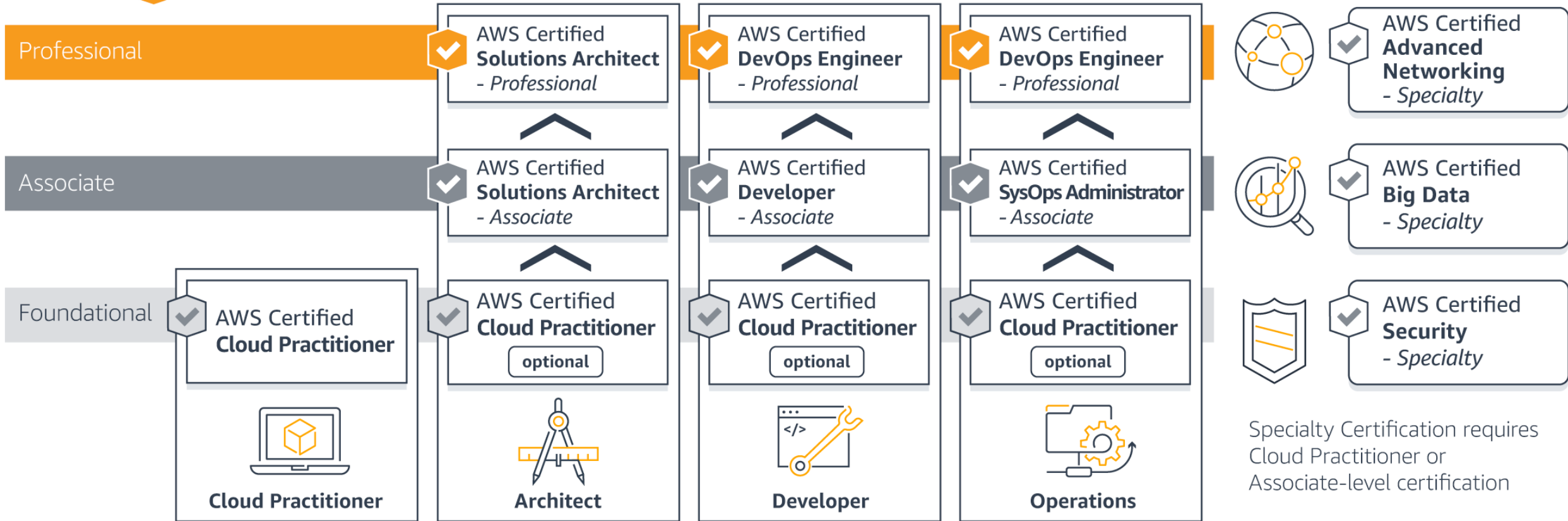
AWS Certifications

AWS Certified Solutions Architect (Associate and Professional)

- Topics covered in Associate exam [4]:
 - Designing and deploying scalable, highly available, and fault tolerant systems on AWS
 - Lift and shift of an existing on-premises application to AWS
 - Ingress and egress of data to and from AWS
 - Selecting the appropriate AWS service based on data, compute, database, or security requirements
 - Identifying appropriate use of AWS architectural best practices
 - Estimating AWS costs and identifying cost control mechanisms
- The associate AWS CSA certificate is a top ranked certification by salary [5]

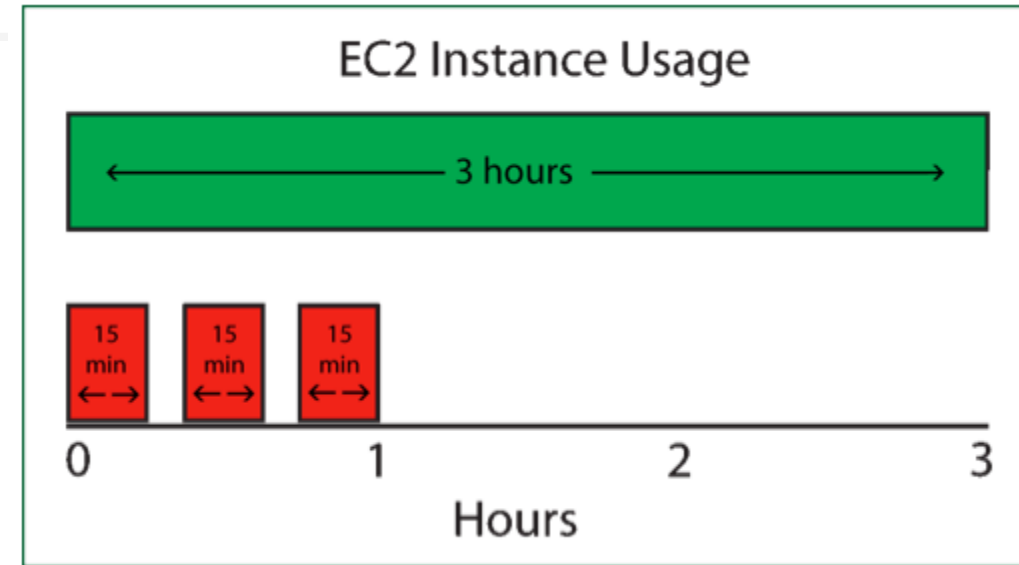
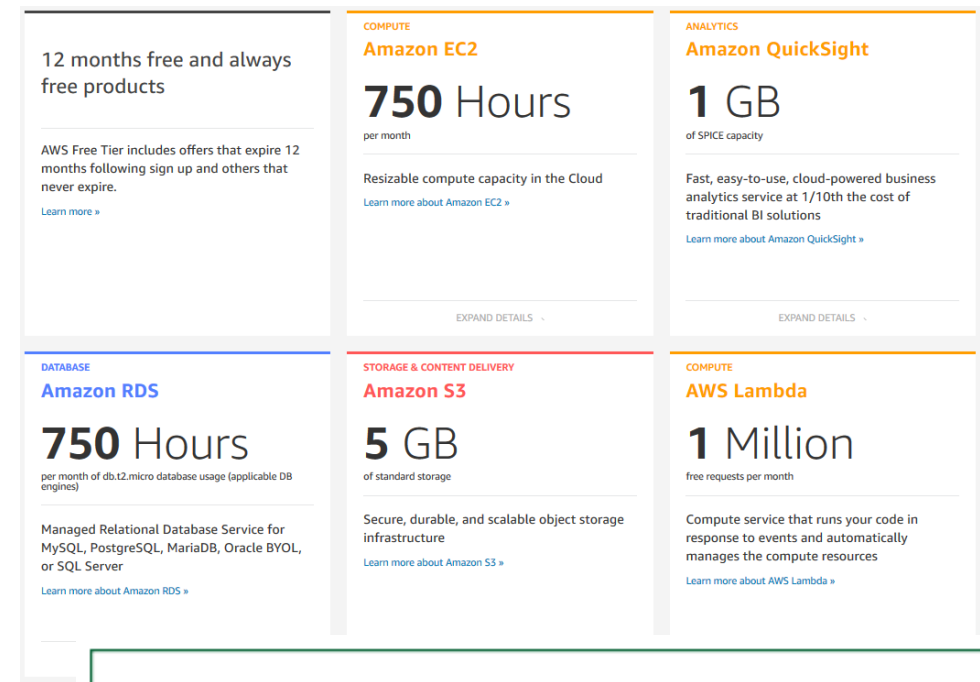


Other AWS Certifications [6]



AWS Costs

- TANSTAAFL (There Ain't No Such Thing As A Free Lunch)
 - Robert Heinlein, “The Moon is a Harsh Mistress”, 1966
- AWS is a case in point
- AWS Free Tier [7]
 - 750 Hours of Linux + 750 Hours of Windows
 - Starting and stopping an EC2 instance 3 times in 1 hour = 3 hours of continuous use [8]
- AWS Cost Calculator [9]



References

- [1] <https://aws.amazon.com/products/>
- [2] <https://www.networksasia.net/article/aws-vs-azure-vs-google-cloud-platforms-compared.1488273117>
- [3] <https://www.amoebanetworks.com/amazon-web-services.html>
- [4] <https://aws.amazon.com/certification/certified-solutions-architect-associate/>
- [5] <https://www.forbes.com/sites/louiscolumbus/2016/02/21/15-top-paying-it-certifications-in-2016-aws-certified-solutions-architect-leads-at-125k/#68e535497978>
- [6] <https://aws.amazon.com/certification/>
- [7] <https://aws.amazon.com/free/>
- [8] <http://docs.aws.amazon.com/awsaccountbilling/latest/aboutv2/free-tier-limits.html>
- [9] <https://calculator.s3.amazonaws.com/index.html>

