Learn how to Learn AWS

Anthony Panozzo

Woven
woventeams.com

Learning AWS

My background

Why learning AWS is important

Why learning AWS is hard

Getting your bearings

Making and executing a learning plan

Learning resources and guides

Conclusion

My background

- Software engineer, ~12 years experience, mostly web
- Currently helping software companies improve their teams through hiring
- Heroku is great
- “Should really learn this AWS thing”
- Still an AWS beginner

Why Learning AWS is **Important**

Why Learning AWS is Important

Feels good!

- Learning new things is fun!
- Sense of accomplishment
- Beginner’s mind

Understanding

- Better understanding of what is actually going on
- Can better contribute to technical discussions
- More versatile across your technical team
- Can lead efforts to improve your system

Why Learning AWS is Important - Powerful Tool

- Entire classes of problems that you can solve with AWS SaaS
  - Database server hosting - not have to deal with replication failures or scaling
- DevOps
  - Rebuild your whole architecture with one command
  - Blue/green deploys, etc.
  - Autoscaling and seamless failover
- Machine learning, voice processing, gaming applications, and more!
- Massive scale

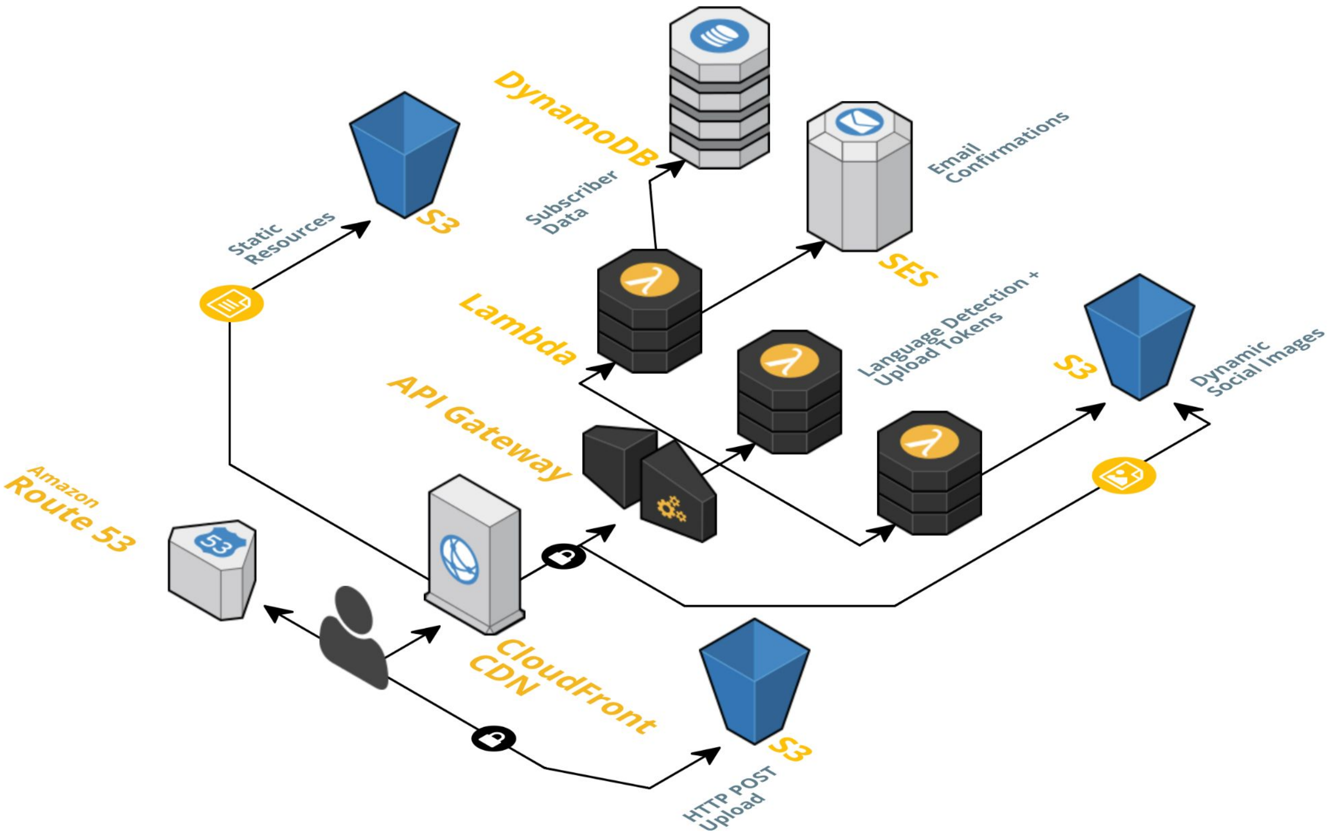
Service	Amazon Web Services	Microsoft Azure	Google Cloud Platform
Computing			
Instance Families	7	7	4
Instance Types Predefined	39 Current Gen, 15 Previous Gen, 54 Total	33	18
Custom Instance Types	-	-	Yes
Regions	12	22	4
New Regions (2016)	5	8	-
Zones	33	-	13
New Zones (2016)	11	-	-
IaaS	Amazon EC2 (Elastic Compute Cloud)	Virtual Machines	Google Compute Engine
Containers	Amazon EC2 Container Service	Docker Virtual Machine Extension	Google Container Engine
PaaS	AWS Elastic Beanstalk	Cloud Services, Azure Websites and Apps	Google App Engine
Serverless Compute	AWS Lambda	Azure Functions [Preview]	Google Cloud Functions [Alpha]
Storage			
Ephemeral (temporary)	Yes	Yes	Yes
Block Storage	Amazon EBS (Elastic Block Storage)	Blob Storage	Google Compute Engine Persistent Disks
Object Storage	Amazon S3	Azure Storage	Google Cloud Standard Storage, DRA
File Storage	Amazon EFS (Elastic File System) [Preview]	Azure File Storage	Avere
Archiving	Amazon Glacier	Azure Backup	Google Cloud Storage Nearline
Database			
Relational Database	Amazon RDS	Azure SQL Database	Google Cloud SQL
NoSQL: Indexed	Amazon SimpleDB	Azure Table Storage	Google Cloud Datastore

Why Learning AWS is Important - “Serverless”

```
# Install serverless globally
$ npm install serverless -g

# Login to your Serverless account
$ serverless login

# Create a serverless function
$ serverless create --template hello-world

# Deploy to cloud provider
$ serverless deploy

# Function deployed! Trigger with live url
$ http://xyz.amazonaws.com/hello-world
```

```yaml
resources:
  Resources:
    myDefaultRole:
      Type: AWS::IAM::Role
      Properties:
        Path: /my/default/path/
        RoleName: MyDefaultRole
        AssumeRolePolicyDocument:
          Version: '2017'
          Statement:
            - Effect: Allow
              Principal:
                Service:
                  - lambda.amazonaws.com
              Action: sts:AssumeRole
        Policies:
          - PolicyName: myPolicyName
            PolicyDocument:
              Version: '2017'
              Statement:
                - Effect: Allow # note that these rights are given in the de
                  Action:
                    - logs:CreateLogGroup
                    - logs:CreateLogStream
                    - logs:PutLogEvents
                  Resource:
                    - 'Fn::Join':
                      - ':'
                      -
                        - 'arn:aws:logs'
                        - Ref: 'AWS::Region'
                        - Ref: 'AWS::AccountId'
                        - 'log-group:/aws/lambda/*:*:*'
                -  Effect: "Allow"
                   Action:
                     - "s3:PutObject"
                   Resource:
                     Fn::Join:
                       - ""
                       - - "arn:aws:s3:::"
                         - "Ref" : "ServerlessDeploymentBucket"
```

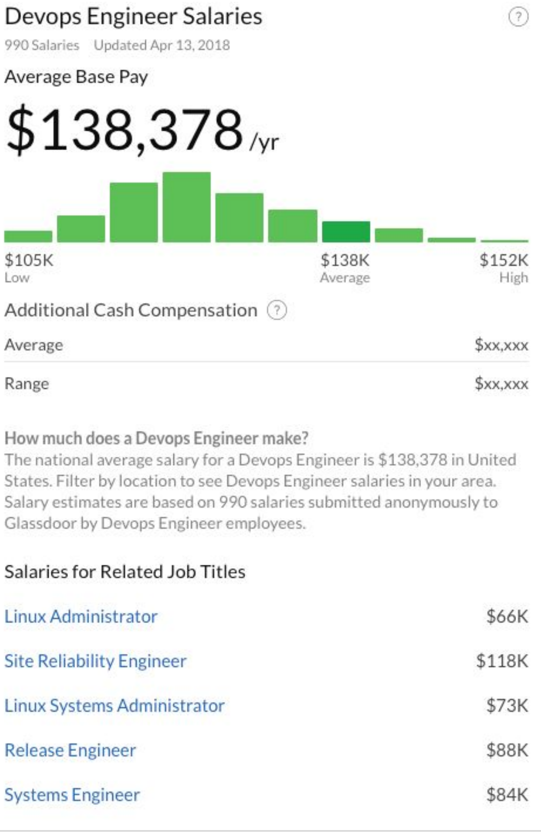
Why Learning AWS is Important - “Serverless”



Why Learning AWS is Important - Career advancement

Valuable skill / knowledge!

Certification	2017 Average Salary
AWS Certified Solutions Architect - Associate	$119,233
AWS Certified Solutions Architect – Professional	$116,838
AWS Certified Developer – Associate	$116,456
AWS Certified SysOps Administrator – Associate	$111,966
AWS Certified DevOps Engineer	$108,315


Devops Engineer Salaries

990 Salaries Updated Apr 13, 2018

Average Base Pay

$138,378 /yr

$105K Low | $138K Average | $152K High

Additional Cash Compensation

Average	$xx,xxx
Range	$xx,xxx

How much does a Devops Engineer make?

The national average salary for a Devops Engineer is $138,378 in United States. Filter by location to see Devops Engineer salaries in your area. Salary estimates are based on 990 salaries submitted anonymously to Glassdoor by Devops Engineer employees.

Salaries for Related Job Titles

Linux Administrator	$66K
Site Reliability Engineer	$118K
Linux Systems Administrator	$73K
Release Engineer	$88K
Systems Engineer	$84K

Why Learning AWS is **Hard**

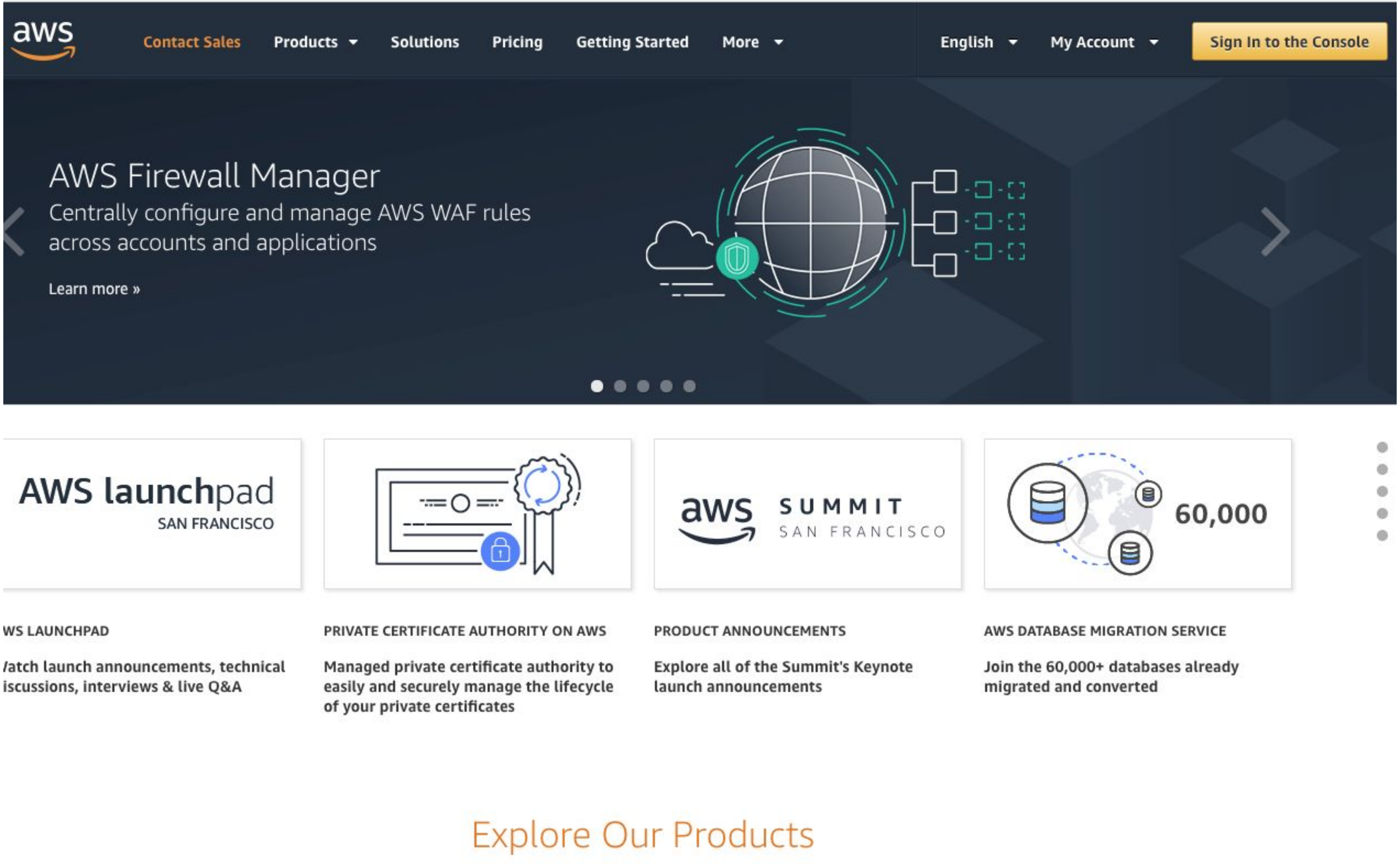
Why Learning AWS is Hard - It’s Wide and Deep

Wide

- Software development
- Software architecture
- Sysadmin
- DevOps
- Distributed systems
- Reliability
- Cost management
- Security
- Scalability

Deep

- Detailed permissions model
- Hundreds of configuration parameters
- Low-level networking details (netmasks, IP tables)


aws
Contact Sales
Products
Solutions
Pricing
Getting Started
More
English
My Account
Sign In to the Console
AWS Firewall Manager
Centrally configure and manage AWS WAF rules across accounts and applications
Learn more »
AWS launchpad
SAN FRANCISCO
aws SUMMIT
SAN FRANCISCO
60,000
WS LAUNCHPAD
/atch launch announcements, technical iscussions, interviews & live Q&A
PRIVATE CERTIFICATE AUTHORITY ON AWS
Managed private certificate authority to easily and securely manage the lifecycle of your private certificates
PRODUCT ANNOUNCEMENTS
Explore all of the Summit's Keynote launch announcements
AWS DATABASE MIGRATION SERVICE
Join the 60,000+ databases already migrated and converted
Explore Our Products

Compute
Amazon EC2
Amazon EC2 Auto Scaling
Amazon Elastic Container Service
Amazon Elastic Container Service for Kubernetes
Amazon Elastic Container Registry
Amazon Lightsail
AWS Batch
AWS Elastic Beanstalk
AWS Fargate
AWS Lambda
AWS Serverless Application Repository
Elastic Load Balancing
VMware Cloud on AWS

Storage
Amazon Simple Storage Service (S3)
Amazon Elastic Block Storage (EBS)
Amazon Elastic File System (EFS)
Amazon Glacier
AWS Storage Gateway
AWS Snowball
AWS Snowball Edge
AWS Snowmobile

Database
Amazon Aurora
Amazon RDS
Amazon DynamoDB
Amazon ElastiCache

Networking & Content Delivery
Amazon VPC
Amazon CloudFront
Amazon Route 53
Amazon API Gateway
AWS Direct Connect
Elastic Load Balancing

Developer Tools
AWS CodeStar
AWS CodeCommit
AWS CodeBuild
AWS CodeDeploy
AWS CodePipeline
AWS Cloud9
AWS X-Ray
AWS Tools & SDKs

Management Tools
Amazon CloudWatch
AWS Auto Scaling
AWS CloudFormation
AWS CloudTrail
AWS Config
AWS OpsWorks
AWS Service Catalog
AWS Systems Manager
AWS Trusted Advisor
AWS Personal Health Dashboard
AWS Command Line Interface
AWS Management Console

Machine Learning
Amazon SageMaker
Amazon Comprehend
Amazon Lex
Amazon Polly
Amazon Rekognition
Amazon Machine Learning
Amazon Translate
Amazon Transcribe
AWS DeepLens
AWS Deep Learning AMIs
Apache MXNet on AWS
TensorFlow on AWS

Analytics
Amazon Athena
Amazon EMR
Amazon CloudSearch
Amazon Elasticsearch Service
Amazon Kinesis
Amazon Redshift
Amazon QuickSight
AWS Data Pipeline
AWS Glue

Security, Identity & Compliance
AWS Identity and Access Management (IAM)
Amazon Cloud Directory
Amazon Cognito
Amazon GuardDuty

AR & VR
Amazon Sumerian

Application Integration
Amazon MQ
Amazon Simple Queue Service (SQS)
Amazon Simple Notification Service (SNS)
AWS AppSync
AWS Step Functions

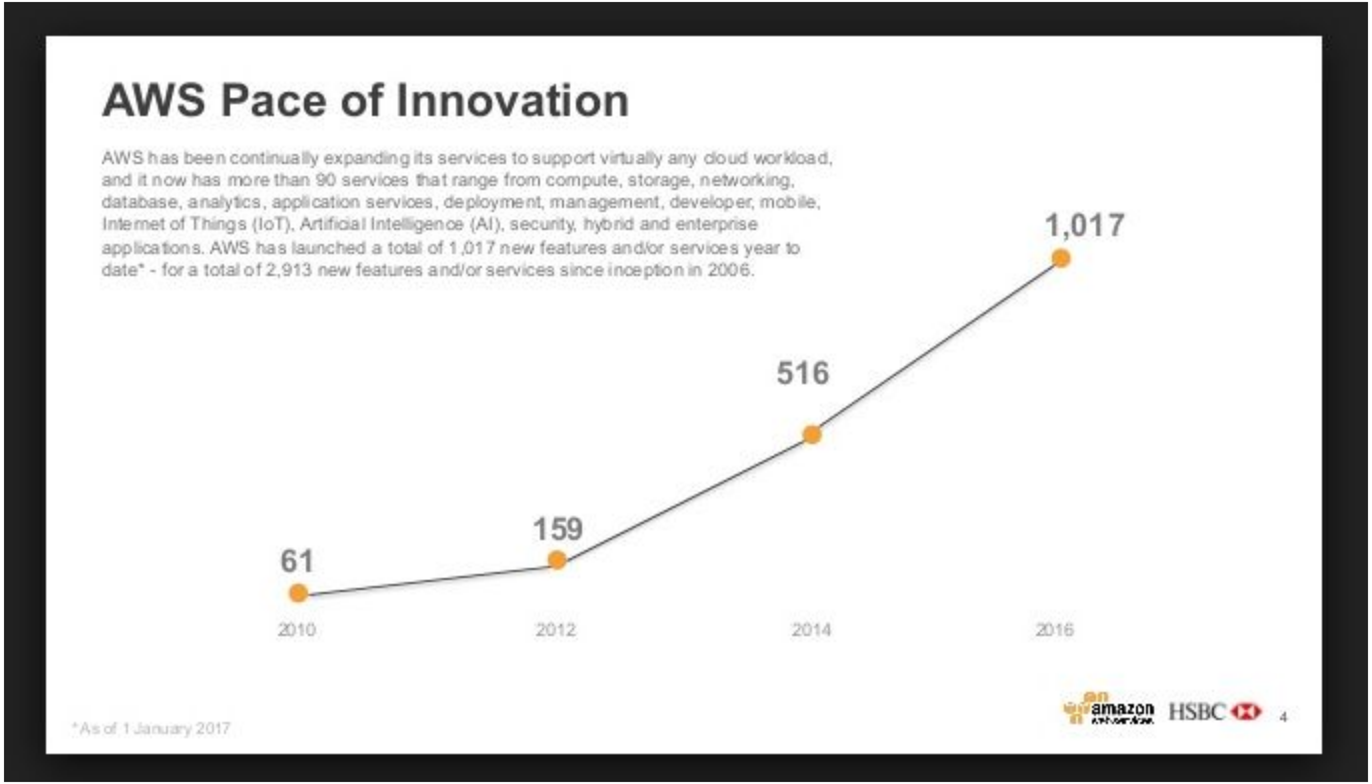
Customer Engagement
Amazon Connect
Amazon Pinpoint
Amazon Simple Email Service (SES)

Business Productivity
Alexa for Business
Amazon Chime
Amazon WorkDocs
Amazon WorkMail

Desktop & App Streaming
Amazon WorkSpaces
Amazon AppStream 2.0

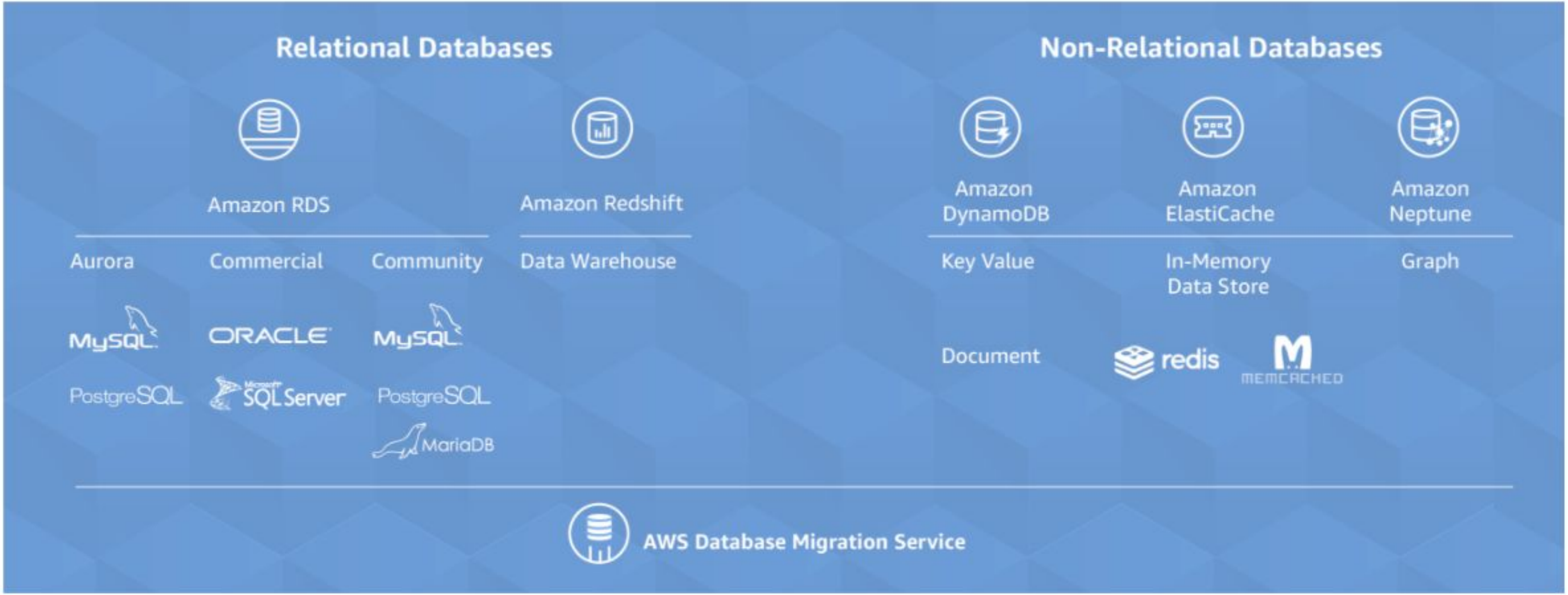
Internet of Things
AWS IoT Core
Amazon FreeRTOS
AWS Greengrass
AWS IoT 1-Click
AWS IoT Analytics

Why Learning AWS is Hard - Changing rapidly



Minor digression: Two-pizza rule

Why Learning AWS is Hard - TIMTOWTDI



Why Learning AWS is Hard - Tying things together

- Hard to know how things fit together
  - “OK, I know how S3 works, now how do I get other services to use it?”
  - “Whoa, there are like four things talking to each other now”
  - “How do I deploy this thing?”
  - “What happens if there are errors?”
  - “I have this idea in my head, how long will it take to test it out?”

Why Learning AWS is Hard

No clear “done” point

It’s valuable *and* difficult. What can we do?

Getting Crystal Clear

- Where are you coming from?
- Where are you trying to go?

These help you get unstuck

Get your bearings

- Easier to learn the basics than ever
- Those aren't going to change
- Look through the services and read their descriptions at a high level
  - "Inch deep and a mile wide" -> just skim the surface
  - You can eliminate a bunch of services this way
  - Even this can take a few hours
- AWS in Plain English

Create an AWS account

- So you can play around with the services
- There is a free tier for new accounts
  - https://aws.amazon.com/free/
  - Bunch of things free for 12 months or more
- Necessary if you want to really learn AWS
- Break your own stuff, not production™

Certifications

Certifications - A useful guide for your learning

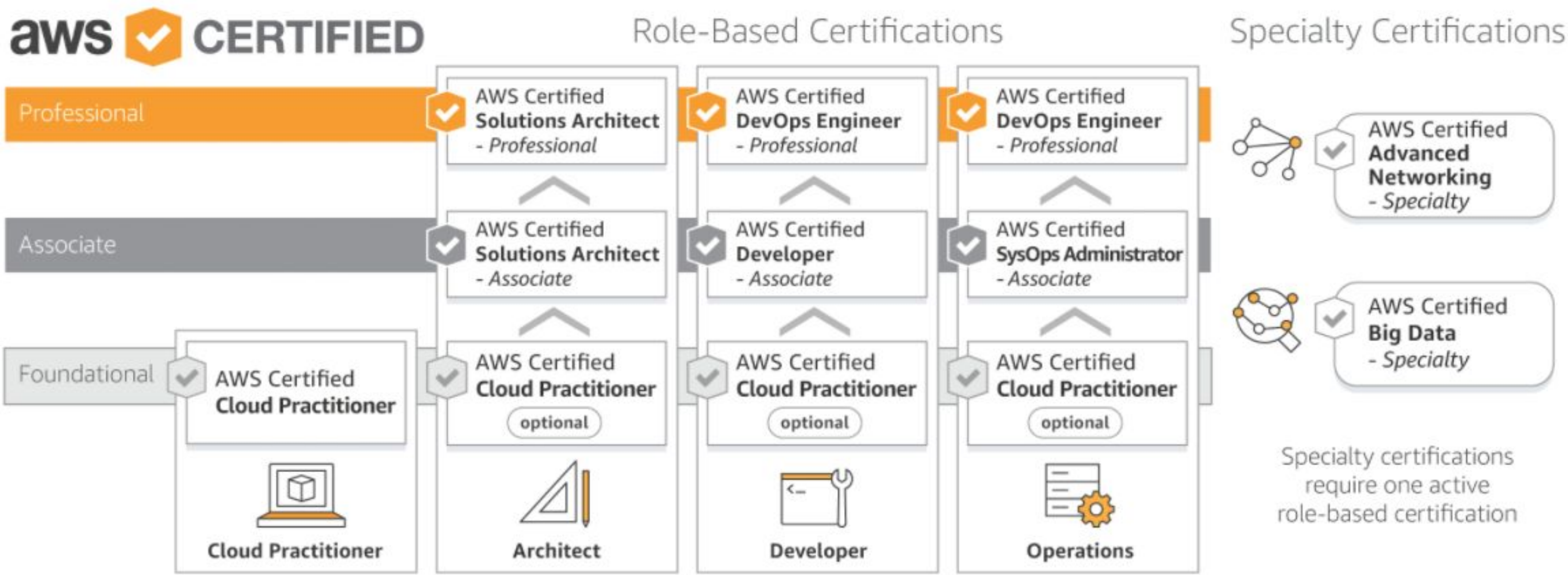
Pros

- Actually a career-useful certification
- They are somewhat hard
- Involve solving real-world problems
- There are a bunch for different paths
- **Many learning resources around this**

Cons

- Cost money
  - Associate: $150
  - Professional: $300
  - Recertification: $75
- Need to be renewed every two years
- Need to go into a training facility to take it

Certification Roadmap



What does a given certification cover?

Designing highly available, cost-efficient, fault-tolerant, scalable systems (60%)
Identify and recognize cloud architecture considerations, such as fundamental components and effective
How to design cloud services
Planning and design
Monitoring and logging
Best practices for AWS architecture
Developing to client specifications, including pricing/cost (e.g., on Demand vs. Reserved vs. Spot; RTO ar
Architectural trade-off decisions (e.g., high availability vs. cost, Amazon Relational Database Service (RD
Hybrid IT architectures (e.g., Direct Connect, Storage Gateway, VPC, Directory Services)
Elasticity and scalability (e.g., Auto Scaling, SQS, ELB, CloudFront)
Implementation/Deployment (10%)
Identify the appropriate techniques and methods using Amazon EC2, Amazon S3, AWS Elastic Beanstalk
Configure an Amazon Machine Image (AMI)
Operate and extend service management in a hybrid IT architecture
Configure services to support compliance requirements in the cloud
Launch instances across the AWS global infrastructure
Configure IAM policies and best practices

Resources

Resources - Paid video courses

#1 recommendation

Generally targeted tightly at certifications

A Cloud Guru / CloudAcademy / others

Hours of material, can rewatch at your own pace

Affordable, and watch for deals

Progress bars!

Great tutorials and labs for actually practicing

Resources - YouTube videos

Less structure than video courses

Useful for understanding certain concepts

Can find some good series/playlists though

AWS Summit, re:Invent, and more:

https://www.youtube.com/user/AmazonWebServices

Resources - Podcasts

- AWS Official Podcast / AWS This Week
    - Updates weekly
    - Useful for keeping up with new developments
    - Probably best if you already have some context
- AWS re:Invent Podcast (2016) (2017)
    - Useful to learn some more advanced strategies and how companies are using AWS in the wild
    - Sometimes hard to understand since they assume you can see the slides

Resources - Get social!

Meetups

- https://www.meetup.com/IndyAWS (this one!)
- https://www.meetup.com/IndyDevOps/
- https://www.meetup.com/indyjs/ (serverless)
- Others?

Slack groups in Indy

- IndyHackers Slack group
- Others?

Conferences

- re:Invent is the biggest one
- Others, especially around the Midwest?

Resources - Official Training

Probably wouldn’t recommend

- Unless you have a lot of money and a short deadline
- However, I haven’t taken them either, so…???

Resources - AWS Whitepapers

Dense resources that cover a lot of ground

Category	Title	Status
Introduction to AWS	Overview of Amazon Web Services	
Introduction to AWS	AWS Storage Services Overview	
Introduction to AWS	AWS Well-Architected Framework	
Introduction to AWS	An Overview of the AWS Cloud Adoption Framework	
Introduction to AWS	AWS Security Best Practices	
Introduction to AWS	How AWS Pricing Works	
Introduction to AWS	Architecting for the Cloud: AWS Best Practices	
Introduction to AWS	AWS Serverless Multi-Tier Architectures: Using Amazon API Gateway and AWS Lambda	
Introduction to AWS	The Business Value of AWS: Succeeding at Twenty-First Century Business Infrastructure	
Cloud Computing Economics	10 Considerations for a Cloud Procurement - A top 10 list of cloud procurement considerations for public sector.	
Cloud Computing Economics	Maximizing Value with AWS	
Cloud Computing Economics	AWS Well-Architected Framework - Cost Optimization Pillar	
Cloud Computing Economics	How AWS Pricing Works	
Cloud Computing Economics	The Business Value of AWS: Succeeding at Twenty-First Century Business Infrastructure	
Cloud Computing Economics	Introduction to AWS Economics: Reducing Costs and Complexity	
Cloud Computing Economics	The Total Cost of (Non) Ownership of Web Applications in the Cloud	
Cloud Computing Economics	The Total Cost of (Non) Ownership of a NoSQL Database Cloud Service	

Resources - Tutorials / Architecture diagrams

Good for understanding how real-world applications work

Also, how people think about problems

Also, how to debug errors that come up

Might be just what you are looking for

Can be out of date or wrong…

Formulate a plan of action

How would you like to have 200 hours to learn AWS?

Formulate a plan

- What do you want to learn?
- What is your timeline?

- Adult learning
    - Weekly check-ins
        - Create calendar reminders for this
        - Agenda
            - Review last week's goals
                - Unblock if needed
            - Set this week's goals
                - Time input to start (4 hours a week)
                - Then more fine-grained goals as you understand better
            - Schedule time on your calendar to study / learn
    - Accountability

We did it!!!

Parting recommendations

Figure out why you want to do this

Get oriented

Sign up for a new AWS account

Buy a good video course

Go through the video course

Make a weekly plan and hold yourself accountable

Try things!