



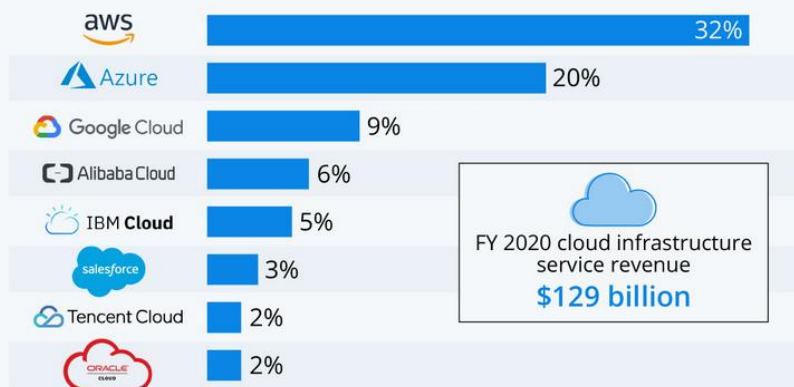
AMAZON WEB SERVICE VIDEO REVIEW

MA5852 – Master Class 2

Nikki Fitzherbert

Amazon Leads \$130-Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q4 2020*



* includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Synergy Research Group



statista

Source: Richter, F. (2021, February 4). *Amazon leads \$130-billion cloud market*. <https://bit.ly/3eDOcBh>

		2020 (USD)	% of total
AWS	Net sales	45,370	11.8
	Operating expenses	31,839	8.77
	Operating income	13,531	59.1

Source: Amazon.com. (2021, February 3). *United States Securities and Exchange Commission Form 10-K*. <https://bit.ly/33yobwT>

Elastic Beanstalk
Serverless Application Repository
AWS Outposts
EC2 Image Builder



Containers

Elastic Container Registry
Elastic Container Service
Elastic Kubernetes Service
Red Hat OpenShift Service on AWS



Storage

S3
EFS
FSx
S3 Glacier
Storage Gateway
AWS Backup




Database

RDS
DynamoDB
ElastiCache

CodeDeploy
CodePipeline
Cloud9
CloudShell
X-Ray
AWS FIS



Customer Enablement

AWS IQ 
Support
Managed Services
Activate for Startups



Robotics

AWS RoboMaker



Blockchain

Amazon Managed Blockchain



Satellite

Ground Station



Quantum Technologies

Amazon Braket

Amazon Comprehend
Amazon Forecast
Amazon Fraud Detector
Amazon Kendra
Amazon Lex
Amazon Personalize
Amazon Polly
Amazon Rekognition
Amazon Textract
Amazon Transcribe
Amazon Translate
AWS DeepComposer
AWS DeepLens
AWS DeepRacer
AWS Panorama
Amazon Monitron
Amazon HealthLake
Amazon Lookout for Vision
Amazon Lookout for Equipment
Amazon Lookout for Metrics



Analytics

Athena



Front-end Web & Mobile

AWS Amplify
Mobile Hub
AWS AppSync
Device Farm
Amazon Location Service



AR & VR

Amazon Sumerian



Application Integration

Step Functions
Amazon AppFlow
Amazon EventBridge
Amazon MQ
Simple Notification Service
Simple Queue Service
SWF
Managed Apache Airflow



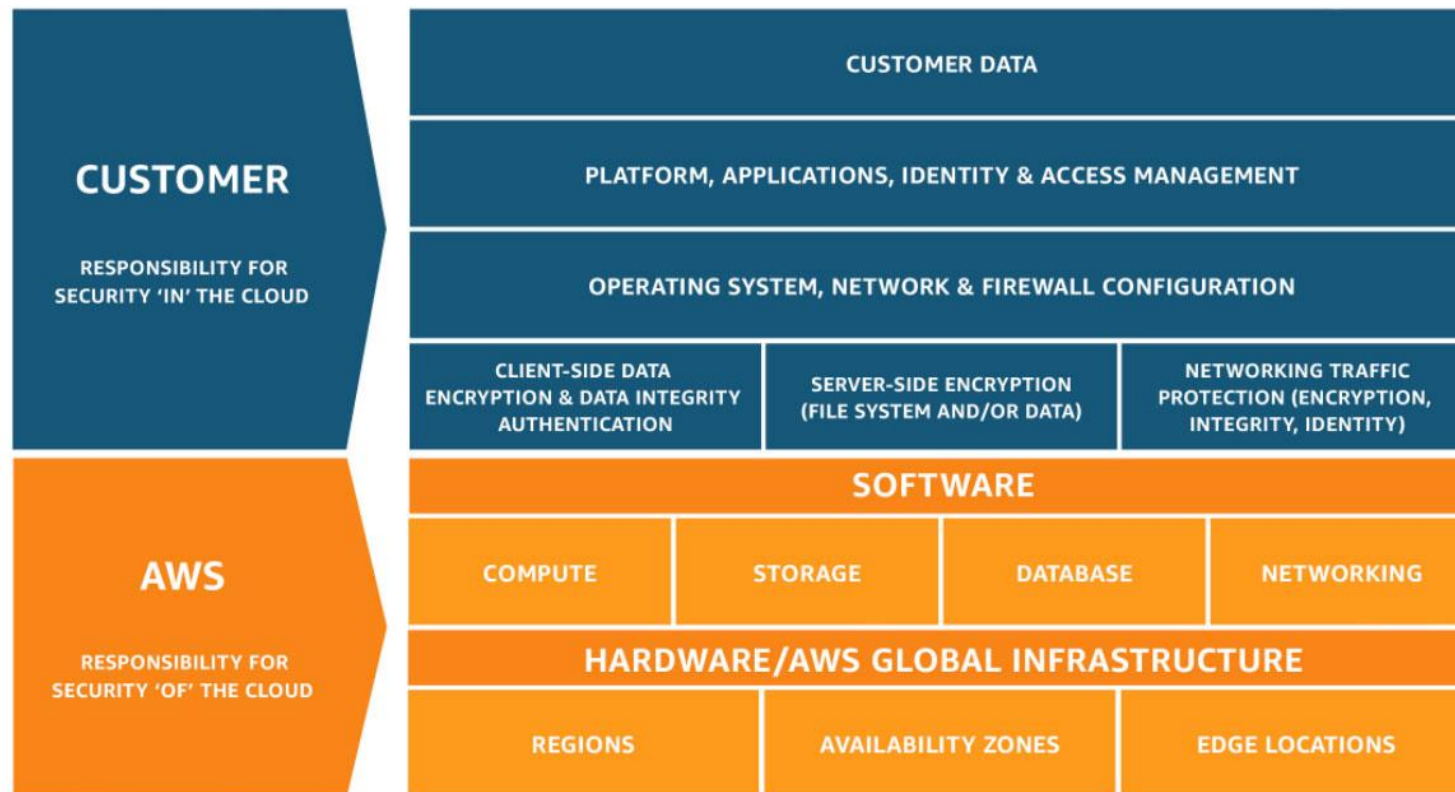
Business Applications

Amazon Connect
Amazon Pinpoint
Amazon Honeycode

(SOME OF) AWS SERVICES

Source: Amazon Web Services. (n.d.). *AWS management console - AWS services*.
<https://amzn.to/33BZaRq>

AWS SECURITY MODEL



Source: Amazon Web Services. (2020, January 22). *Introduction to AWS security - AWS whitepaper*.
<https://amzn.to/3fcaZmD>

AWS GLOBAL INFRASTRUCTURE



Source: Amazon Web Services. (n.d.). *AWS global infrastructure*.
<https://aws.amazon.com/about-aws/global-infrastructure/>



Source: Amazon Web Services. (n.d.). *Regions and availability zones: Region maps and edge networks*.
<https://amzn.to/2ReGm8b>

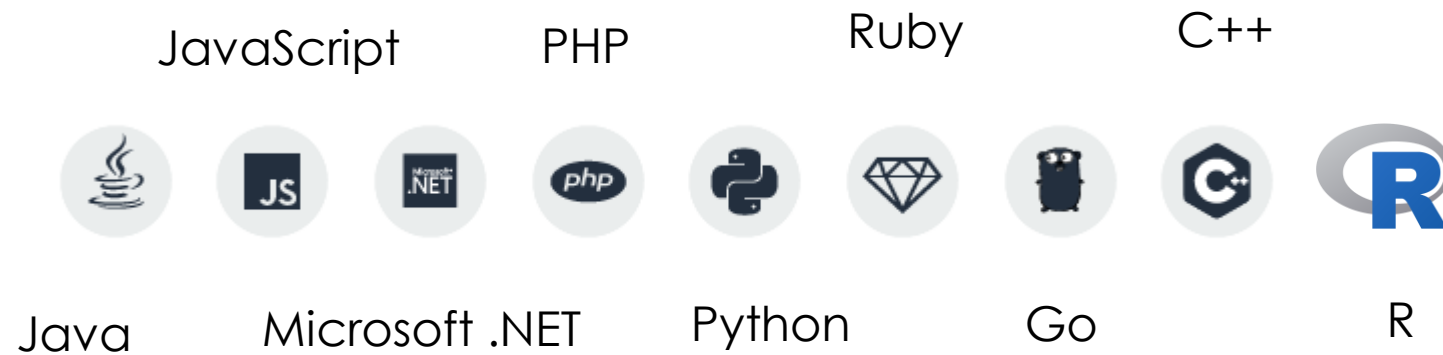
AWS MACHINE LEARNING

Amazon SageMaker - Build, train, and deploy machine learning models fast

1. Artificial Intelligence
2. Automated data extraction and analysis
3. Business metrics
4. Computer vision
5. Language AI
6. Code and DevOps
7. Industrial
8. Healthcare
9. Learning tools

Source: Amazon Web Services. (n.d.). *Machine learning on AWS*. <https://aws.amazon.com/machine-learning/>

PROGRAMMING LANGUAGES



FRAMEWORKS



theano



Sources: Amazon Web Services. (n.d.). *Amazon SageMaker: Developer guide*. <https://amzn.to/3tFfcEC>;
Amazon Web Services. (n.d.). *AWS Deep Learning AMIs*. <https://aws.amazon.com/machine-learning/amis/>



ALGORITHM IMPLEMENTATION

- 17 built-in pre-coded algorithms
- Customised algorithm in a supported framework (script mode)
- Custom docker image for any other situation

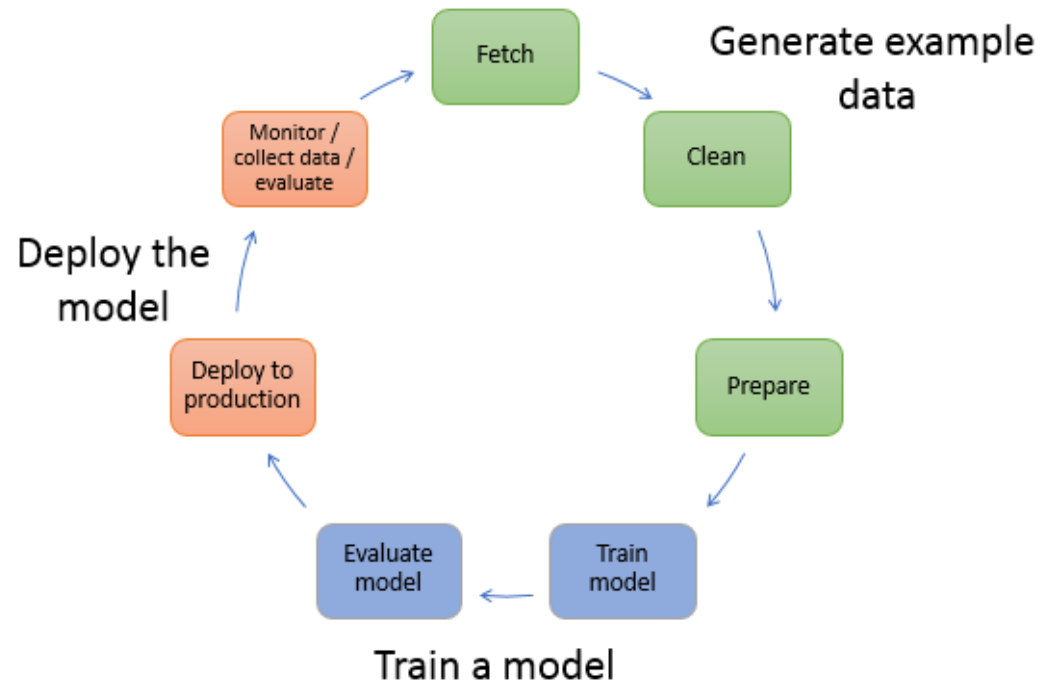
COMPUTING RESOURCES

Instance	vCPU	GPU	CPU Memory(GiB)	GPU Memory(GiB)	Price per hour
t3.medium	2	-	4	-	\$0.06
m5.xlarge	4	-	16	-	\$0.29
m5.8xlarge	32	-	128	-	\$2.30
c5.xlarge	2	-	4	-	\$0.13
c5.9xlarge	36	-	72	-	\$2.40
p3.2xlarge	8	1	61	16	\$5.29
p3.16xlarge	64	8	488	128	\$38.95

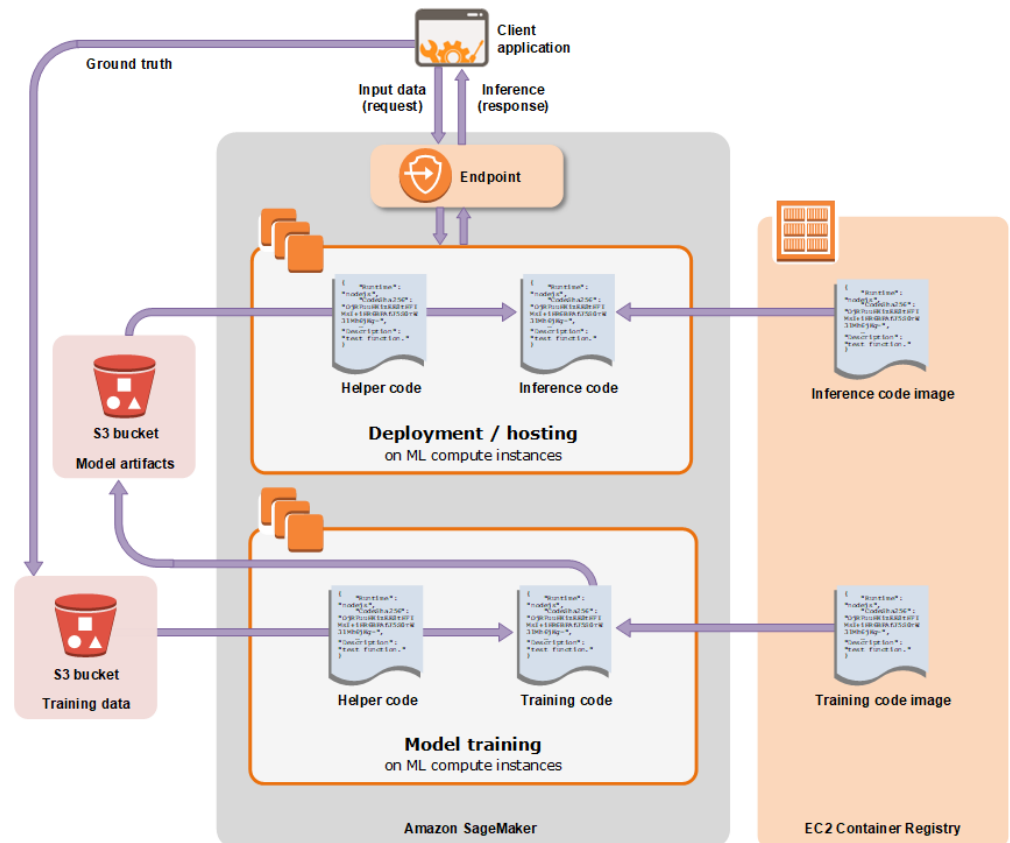
Note: Prices are for the Asia-Pacific (Sydney) region

Sources: Amazon Web Services. (n.d.). *Amazon EC2 instance types*. <https://aws.amazon.com/ec2/instance-types/>;
Amazon Web Services. (n.d.). *Amazon SageMaker pricing*. <https://aws.amazon.com/sagemaker/pricing/>

BUILDING, TRAINING AND DEPLOYING A ML MODEL IN AWS



Source: Amazon Web Services. (n.d.). *Amazon SageMaker: Developer guide*.
<https://amzn.to/3tFfcEC>



Source: Amazon Web Services. (n.d.). *Amazon SageMaker: Developer guide*.
<https://amzn.to/3tFfcEC>

THE GOOD, THE BAD AND THE NOT-SO-GOOD

- Able to scale resources up and down as required
- (Usually) only pay for what is being used
- Pre-established, reliable and secure IT infrastructure
- Easy access to the latest frameworks and algorithms
- Free Tier to get initial experience
- Little to no control over back-end IT infrastructure
- Service outages and downtime
- Risk of data breaches and information theft
- Education and training required before use
- Service quotas in place to avoid resource overload
- It will pay to become a fast programmer
- Not all services are available in every region
- Script mode can only use packages on PyPi
- Flexibility to customise functionality such as algorithms and frameworks... easy to get overwhelmed

The background features a solid black field. At the top, there is a horizontal band of vibrant, wavy colors including yellow, orange, red, and teal, creating a sense of motion and depth.

Questions?