

Amazon Web Services

« [Symfony's autowiring \(/2017/09/19/symfony-autowire.html\)](#) »

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More often than not, I'm using Amazon Web Services (AWS) as my "cloud". Not only for my own projects, but almost all customers I'm working for use Amazon for hosting their applications. So over time you build up a lot of experience on AWS service: you know how to (correctly) setup VPC's, know when to use ECS, EC2 or lambda to host code and even services like S3, SNS and SQS pose no challenges anymore.

But there are a lot of AWS services available. And I do mean: a LOT. Currently, there are 163 (!) different services that are available from the Amazon Dashboard, each with their own way of working, difficulties, catches and best practises.

Discovering AWS

You might realise that it's probably near impossible to dive into each service and completely understand how they work and most likely, you don't really need to know the exact ins and outs. But, having a basic understanding on each service can be a major benefit as a developer, architect or administrator. It makes it easier to see if there is an already existing solution for your problem at hand.

So, I dove into each and every service to figure out what it exactly was for and how it works in the basics. I tried to experiment with as many components as possible (time and money permitting, I didn't want to spend 15.000\$ on AWS Data Exchange). I tried to capture what the service does in a single one-liner to give you a global overview.

I think most of them are correct enough but if you have any suggestions or corrections, please tell me!

Compute

EC2	Virtual Private Servers
Lightsail	Amazon's hosting provider (vps, dns, storage)
Lambda	Functions you can run, written in Python, NodeJS, Go etc. Can run many in parallel.
Batch	Run software jobs on EC2 machines
Elastic Beanstalk	Run software on managed virtual machines
Serverless Application Repository	Repository of serverless applications that you can deploy (on lambda)
AWS Outposts	Run Amazon services in your own data center
EC2 Image Builder	Create EC2 (ami?) images automatically

Storage

NAVIGATION 

S3	File storage. Not directly used for mounting, but you can directly download files from HTTP.
EFS	NFS. Mount network disks to your machines.
FSx	Windows / Lustre filesystems you can connect to your ec2 machines
S3 Glacier	Low cost storage system for backups and archives and such
Storage Gateway	iSCSI so you can connect s3 to your own (remote) machine.
AWS Backup	Automatically create backups of different AWS service (ec2, rds etc)

Database

RDS	Managed mysql, postgres databases etc.
DynamoDB	Large & scalable non-relational database
ElastiCache	Managed memcache and redis machines
Neptune	Graph database
Amazon Redshift	Warehousing. Store lots of data that can be processed through streams.
Amazon QLDB	Database for immutable and cryptographically verifiable data (money transactions etc)
Amazon DocumentDB	MongoDB clone (but not really compatible anymore)
Amazon Keyspaces	Managed Apache Cassandra clone

Migration & Transfer

AS Migration Hub	Migrate things from your DC to AWS
Application Discovery Service	Discover services in your datacenter
Database Migration Service	Migrate databases to RDS while staying online (can convert structures as well)
Server Migration Service	Migrate virtual machines to amazon.
AWS Transfer Family	(s)FTP service with S3 backend. Upload to FTP, directly store on S3 bucket.
Snowball	Get a machine from AWS, plug in your DC, transfer data fast to AWS, return machine
DataSync	Sync data between your datacenter and AWS

Networking & Content Delivery

VPC	Create your own virtual private network within AWS.
CloudFront	Content Delivery Network.
Route 53	Manage domain names and records.
API Gateway	Create HTTP APIs and let them connect to different backends.
Direct Connect	Create a (physical) connection between you (or DC) to AWS.
AWS App Mesh	Automatically run Envoy as a sidecar for your containers (ECS or EKS).
AWS Cloud Map	Service discovery for your containers.
Global Accelerator	Run your app on edge locations so they are closer to your customers (CDN for apps).

Developer Tools

Developer Tools

NAVIGATION 

CodeStar	Quickly develop applications by using template code and codecommit, codebuild etc
CodeCommit	Amazon source repositories (git repo's etc)
CodeBuild	CI service
CodeDeploy	Deployment service
CodePipeline	Code delivery with workflows
Cloud9	Online IDE
X-Ray	Allows tracing in your applications, supports Python, NodeJs, Go etc.

Robotics

AWS RoboMaker	Cloud solution for robotic developers to simulate, test and securely deploy robotic applications
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Customer Enablement

AWS IQ	Job board: Hire AWS experts for whatever you need.
Support	AWS support center
Managed Services	Let AWS handle your AWS services for you.

Blockchain

Amazon Managed Blockchain	Block chains
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Satellite

Ground Station	Satellites as a service
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Quantum Technologies

Amazon Braket	Some quantum thing. It's in preview so I have no idea what it is.
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Management & Governance

AWS Organizations	Configure (sub)organisations and accounts
CloudWatch	Logging from various AWS components
AWS Auto Scaling	Scale resources based on your custom inputs and rules
CloudFormation	Templates to create and configure AWS components (think terraform/sls)
CloudTrail	Figure out who did what in your AWS services
Config	Audit the configurations of your AWS resources
OpsWorks	Use Ansible to automate stuff
Service Catalog	Manage list of items/codes etc you have in the cloud
Systems Manager	View data from your resources grouped in ways you like (like application specific etc)
AWS AppConfig	Store and publish application configuration data
Trusted Advisor	Checks your account for issues (costs, performance, security etc)
Control Tower	Manage multi-accounts

Management & Governance

NAVIGATION 

AWS License Manager	Manage licenses
AWS Well-Architected Tool	Generate questionnaires about your architecture to see if you follow best practices
Personal Health Dashboard	StatusPage for AWS
AWS Chatbot	Connect AWS to slack
Launch Wizard	Deploy MSSQL or SAP
AWS Compute Optimizer	Finds your resources and advices on how to save costs

Media Services

Elastic Transcoder	Encode files from S3 into different other formats and store back at S3
Kinesis Video Streams	Capture media streams
MediaConnect	?
MediaConvert	Convert media into different formats
MediaLive	Share live video with many others
MediaPackage	?
MediaStore	?
MediaTailor	Insert advertisements into your broadcasts
Elemental Appliances & Software	create videos on-premise. Basically a mix of all of the above services. Seems expensive. Probably is.

Machine Learning

Amazon SageMaker	Machine learning tools
Amazon CodeGuru	Profile java code with machine learning
Amazon Comprehend	Understand and classify data like emails, tweets etc
Amazon Forecast	Create forecasts from data
Amazon Fraud Detector	in preview so no idea.
Amazon Kendra	Search service where you can ask questions
Amazon Lex	Create voice and chatbots
Amazon Machine Learning	Deprecated. Use SageMaker instead.
Amazon Personalize	Create personalized recommendations based on data (mahout??)
Amazon Polly	Convert text to speech in different languages
Amazon Rekognition	Recognize objects and people in images
Amazon Textract	Convert text found in images to text (OCR)
Amazon Transcribe	Convert audio to text
Amazon Translate	Translates text from one language to another
AWS DeepLens	A video camera that does machine learning
AWS DeepRacer	Some kind of game where you program a racecar to race against others.
Amazon Augmented AI	Let humans in the loop to make AI learn things better

AWS DeepComposer

Computer generated music. It's as horrible as it sounds.

Analytics

Athena	Query data stored in s3 buckets.
EMR	Elastic Map/Reduce
CloudSearch	AWS version of managed document search system (like elasticsearch)
Elasticsearch Service	Elasticsearch as a service
Kinesis	Collect massive amount of data so you can do analytics (like ELK?)
QuickSight	Business Intelligence service
Data Pipeline	Move and transform data to dynamodb, rds, s3 etc.
AWS Data Exchange	Find APIs which data you can consume, which can be very expensive
AWS Glue	ETL service. Enrich, validate data.
AWS Lake Formation	Create data lakes
MSK	Kafka as a service

Security, Identity, & Compliance

IAM	AWS's permission system that can control users and AWS services.
Resource Access Manager	Share certain AWS resources like Route53, licenses, ec2 with other accounts.
Cognito	User and password management system. Useful for managing users for your applications.
Secrets Manager	Secrets key/value store. Can automatically rotate secrets.
GuardDuty	Automatically scan your cloudtrail/vpc logs for threats.
Inspector	Automatically find (security) issues in your network and machines.
Amazon Macie	Analyzes data in your S3 buckets and check for PII data.
AWS Single Sign-On	Allow single-sign on to your applications.
Certificate Manager	Manage and even create (free) SSL certificates.
Key Management Service	Manage secret keys
CloudHSM	Hardware security modules. Allows you to generate and operate on cryptographic keys.
Directory Service	Active directory as a service
WAF & Shield	Web Application Firewall (for loadbalancers, cloudfront, api gateway). Can setup your own rules or use predefined ones
AWS Firewall Manager	Firewall manager for different accounts in your organisation
Artifact	Documents for cloud compliance (things like 27001 certification etc)
Security Hub	Overall security checker that uses guardduty, inspector, macie etc
Detective	Log security issues found (from security hub etc)

Mobile

AWS Amplify	Let AWS automatically generate frontend & backend apps and deploy them automatically.
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Mobile

NAVIGATION 

Mobile Hub	Part of AWS Amplify now.
AWS AppSync	Create API backends that you can connect to. Can be created through AWS Amplify as well.
Device Farm	AWS BrowserStack. Automatically test apps on many different mobile devices and browsers.

AR & VR

Amazon Sumerian	No idea. The dashboard crashes in my browsers
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Application Integration

Step Functions	State machines written in amazon's own language
Amazon AppFlow	Automatically connects apps together (zapier?). For instance: slack to s3 buckets.
Amazon EventBridge	Some kind of eventbus system
Amazon MQ	ActiveMQ
Simple Notification Service	Notification system that can notify through email, api endpoints, sms etc.
Simple Queue Service	Message queue system
SWF	Create workflows.

AWS Cost Management

AWS Cost Explorer	Gives an overview and projection of your budgets
AWS Budgets	Create budgets for your AWS components
AWS Marketplace Subscriptions	Find (and buy) AMI's with software installed

Customer Engagement

Amazon Connect	AWS version of ZenDesk
Pinpoint	Create transactional emails, SMS or voice calls based on templates.
Simple Email Service	Send out emails. Email provider.

Business Applications

Alexa for Business	Connect Alexa to your business needs.
Amazon Chime	AWS version of Zoom.
WorkMail	AWS version of Gmail / Calendar.

End User Computing

WorkSpaces	Virtual desktops from Windows or Linux.
AppStream 2.0	Stream applications running native onto your browser
WorkDocs	Store your documents and manage them online.
WorkLink	Connect mobile users to your intranet.

Internet Of Things

IoT Core	Manage fleets of IOT devices through MQTT broker
FreeRTOS	RTOS operating system for microcontrollers to automatically connect to IOT-Core or greengrass.
IoT 1-Click	Manage 1-click buttons that can be connected to other systems like Lambda
IoT Analytics	Clean up and save messages from topics into a data-store for analytics
IoT Device Defender	Detect unwanted issues on your devices and take actions
IoT Device Management	Organize IoT devices into groups, schedule jobs on the devices and configure remote access
IoT Events	Monitor telemetry from devices and then trigger other AWS services or jobs on the devices themselves
IoT Greengrass	A message broker can buffer messages for groups of up to 200 devices which can communicate and process data locally if connectivity to IoT Core is intermittent.
IoT SiteWise	?
IoT Things Graph	Cloudformation-like designer for graphing how devices should communicate with other AWS services

Game Development

Amazon GameLift	Deploy game servers with low latency on AWS
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Containers

Elastic Container Registry	Store docker images like on DockerHub
Elastic Container Service	Run containers, either on your own EC2 machines, or on managed machines called Fargate.
Elastic Kubernetes Service	Kubernetes as a service

Thanks to Brian Thomas Smith for filling in the blanks on IoT.

Conclusion

With over 150 services running on Amazon AWS, it's near impossible to be an expert on all of them. And that's ok: when you deal with large EKS or ECS clusters, chances are you never will touch the IOT services for instances. I found that most services are pretty well explained and easy to start with.

One of the biggest issues are the IOT services: since I have no experience with smart devices, MQTT or IOT in general, i finally managed to get a simple GO application to connect to IOT-core, and connect different rules, pipelines, analytics etc to it. But even still it's very unclear what the different services actually do. Hopefully there will be AWS IOT experts out there that can enlighten me.

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ABOUT THIS SITE

This is the personal website of Joshua Thijssen, where I on occasion post useful posts, not-so-useful posts, rants, deep thoughts and everything in between.

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