

1. Access control list (ACL): A firewall/security layer on the subnet level.
2. Auto scaling: Automates the process of adding or removing EC2 instances based on traffic demand for your application
3. Buckets: Root-level “folders”
4. Folder: Any “subfolder” created in a bucket
5. CloudFront: Content delivery network (CDN) that allows you to store your content at “edge locations” located all around the world, allowing customers to access your content more quickly
6. CloudTrail: Allows you to monitor all actions taken by IAM users
7. CloudWatch: Service that allows you to monitor various elements of your AWS account
8. Consolidated billing: Allows you to view, manage, and pay bills for multiple AWS accounts in one user interface
9. DNS server: A database of website domains and their corresponding IP addresses
10. DynamoDB: NoSQL database service that does not provide other NoSQL software options
11. Elastic Block Store (EBS): Provides continuous block storage volumes for use of EC2 instances.
12. Elastic Compute Cloud (EC2): A virtual computer, very similar to a desktop/laptop computer
13. Elastic Load Balancing (ELB): Evenly distributes traffic between EC2 instances that are associated with it
14. ElastiCache: Data caching service used to help improve the speed/performance of web applications running on AWS.
15. Elasticity: The ability of a system to increase and decrease in size
16. Fault tolerance: Property that enables a system to continue operating properly in the event of the failure of one or more components
17. Firewall: A type of software that either allows or blocks certain kinds of internet traffic to pass through it
18. High availability: Refers to systems that are durable and likely to operate continuously without failure for a long time
19. IAM users: Individuals who have been granted access to an AWS account
20. Identity and Access Management (IAM): Service where AWS user accounts and their access to various AWS services are managed
21. Lambda: Server less computing that will replace EC2 instances, for the most part

22. Object availability: Percent over a one-year time period that a file stored in S3 will be accessible
23. Object durability: Percent over a one-year time period that a file stored in S3 will not be lost
24. Object lifecycle: Set rules to automatically transfer objects between storage classes at defined time intervals
25. Object sharing: Ability to make any object publicly available via a URL link
26. Object versioning: Automatically keep multiple versions of an object (when enabled)
27. Organizations: Allow you or your company access to manage billing and access to multiple AWS accounts in one user interface
28. Principle of least privilege: Giving a user only the rights/access to the AWS services and resources they need to do their job and nothing more
29. Publishers: Human/alarm/event that gives SNS the message that needs to be sent
30. Relational Database Service (RDS): SQL database service that provides a wide range of SQL database options to select from
31. Red Shift: Data warehouse database service designed to handle petabytes of data for analysis
32. Roles: How different AWS services are granted permission to communicate and share data
33. Route 53: Where you configure and manage web domains for websites or applications you host on AWS
34. Scalability: The ability of a system to easily increase in size and capacity in a cost-effective way
35. Security group (SG): Firewall/security layer on the server/instance level
36. Shared responsibility model: Defines what you and AWS are responsible for when it comes to security and compliance
37. Simple Notification Service (SNS): AWS service that allows you to automate the sending of email or text messaging notifications based on events that happen in your AWS account
38. Simple Storage Service (S3): Online bulk storage service you can access from almost any device
39. Storage class: Represents "classification" assigned to each object in S3 (standard, RRS, S3-IA, Glacier)
40. Performance across the S3 Storage Classes

	S3	S3	S3 Standard-	S3 One	S3 Glacier	S3 Glacier
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	Standard	Intelligent-Tiering*	IA	Zone-IA [†]		Deep Archive
Designed for durability	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)
Designed for availability	99.99%	99.9%	99.9%	99.5%	99.99%	99.99%
Availability SLA	99.9%	99%	99%	99%	99.9%	99.9%
Availability Zones	≥3	≥3	≥3	1	≥3	≥3
Minimum capacity charge per object	N/A	N/A	128KB	128KB	40KB	40KB
Minimum storage duration charge	N/A	30 days	30 days	30 days	90 days	180 days
Retrieval fee	N/A	N/A	per GB retrieved	per GB retrieved	per GB retrieved	per GB retrieved
First byte latency	Millisecond	milliseconds	milliseconds	milliseconds	select minutes or hours	select hours
Storage type	Object	Object	Object	Object	Object	Object
Lifecycle transition	Yes	Yes	Yes	Yes	Yes	Yes

41. Subnet: A subsection of a network and generally includes all the computers in a specific location

42. Subscriptions: Endpoints to which a topic sends messages

43. Topics: How you label and group different endpoints to which you send messages

44. Trusted Advisor: Service that “advises” and helps you optimize aspects of your AWS account

45. User credentials: IAM user’s username and password for logging in to AWS

46. Virtual Private Cloud (VPC): A private subsection of AWS you control and in which you can place AWS resources

- 47. AWS IoT: AWS IoT is a managed cloud service that lets connected devices easily and securely interact with cloud applications and other devices.
- 48. Certificate Manager: AWS Certificate Manager lets you easily provision, manage, and deploy Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates for use with AWS services.
- 49. Cloud Formation: AWS Cloud Formation lets you create and update a collection of related AWS resources in a predictable fashion.
- 50. CloudFront: Amazon CloudFront provides a way to distribute content to end-users with low latency and high data transfer speeds.
- 51. CloudSearch: AWS CloudSearch is a fully managed search service for websites and apps.
- 52. CloudTrail: AWS CloudTrail provides increased visibility into user activity by recording API calls made on your account.
- 53. CloudTrail: Allows you to monitor all actions taken by IAM users
- 54. Data Pipeline: AWS Data Pipeline is a lightweight orchestration service for periodic, data-driven workflows.
- 55. DMS: AWS Database Migration Service (DMS) helps you migrate databases to the cloud easily and securely while minimizing downtime.
- 56. DynamoDB: Amazon DynamoDB is a scalable NoSQL data store that manages distributed replicas of your data for high availability.
- 57. EC2: Amazon Elastic Compute Cloud (EC2) provides resizable compute capacity in the cloud.
- 58. EC2 Container Service: Amazon ECS allows you to easily run and manage Docker containers across a cluster of Amazon EC2 instances.
- 59. Elastic Beanstalk: AWS Elastic Beanstalk is an application container for deploying and managing applications.
- 60. ElastiCache: Amazon ElastiCache improves application performance by allowing you to retrieve information from an in-memory caching system.
- 61. Elastic File System: Amazon Elastic File System (Amazon EFS) is a file storage service for Amazon Elastic Compute Cloud (Amazon EC2) instances.

- 62. Elastic search Service: Amazon Elasticsearch Service is a managed service that makes it easy to deploy, operate, and scale Elasticsearch, a popular open-source search and analytics engine.
- 63. Elastic Transcoder: Amazon Elastic Transcoder lets you convert your media files in the cloud easily, at low cost, and at scale
- 64. EMR: Amazon Elastic MapReduce lets you perform big data tasks such as web indexing, data mining, and log file analysis.
- 65. Glacier: Amazon Glacier is a low-cost storage service that provides secure and durable storage for data archiving and backup.
- 66. IAM: AWS Identity and Access Management (IAM) lets you securely control access to AWS services and resources.
- 67. Inspector: Amazon Inspector enables you to analyze the behavior of the applications you run in AWS and helps you to identify potential security issues.
- 68. Kinesis: Amazon Kinesis services make it easy to work with real-time streaming data in the AWS cloud.
- 69. Lambda: AWS Lambda is a compute service that runs your code in response to events and automatically manages the compute resources for you.
- 70. Machine Learning: Amazon Machine Learning is a service that enables you to easily build smart applications.
- 71. OpsWorks: AWS OpsWorks is a DevOps platform for managing applications of any scale or complexity on the AWS cloud.
- 72. RDS: Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale familiar relational databases in the cloud.
- 73. Redshift: Amazon Redshift is a fast, fully managed, petabyte-scale data warehouse that makes it cost-effective to analyze all your data using your existing business intelligence tools
- 74. Route 53: Amazon Route 53 is a scalable and highly available Domain Name System (DNS) and Domain Name Registration service.
- 75. Route 53: Where you configure and manage web domains for websites or applications you host on AWS

- 76. SES: Amazon Simple Email Service (SES) enables you to send and receive email.
- 77. SNS: Amazon Simple Notification Service (SNS) lets you publish messages to subscribers or other applications.
- 78. Storage Gateway: AWS Storage Gateway securely integrates on-premises IT environments with cloud storage for backup and disaster recovery.
- 79. SQS: Amazon Simple Queue Service (SQS) offers a reliable, highly scalable, hosted queue for storing messages.
- 80. SWF: Amazon Simple Workflow (SWF) coordinates all of the processing steps within an application.
- 81. S3: Amazon Simple Storage Service (S3) can be used to store and retrieve any amount of data.
- 82. VPC: Amazon Virtual Private Cloud (VPC) lets you launch AWS resources in a private, isolated cloud

AWS Data Pipeline is a web service that helps you reliably process and move data between different AWS compute and storage services, as well as on-premises data sources, at specified intervals. With AWS Data Pipeline, you can regularly access your data where it's stored, transform and process it at scale, and efficiently transfer the results to AWS services such as Amazon S3, Amazon RDS, Amazon DynamoDB, and Amazon EMR.

AWS Data Pipeline helps you easily create complex data processing workloads that are fault tolerant, repeatable, and highly available. You do not have to worry about ensuring resource availability, managing inter-task dependencies, retrying transient failures or timeouts in individual tasks, or creating a failure notification system. AWS Data Pipeline also allows you to move and process data that was previously locked up in on-premises data silos.

What is AWS Code Pipeline?

AWS Code Pipeline is a continuous delivery service that enables you to model, visualize, and automate the steps required to release your software. With AWS Code Pipeline, you model the full release process for building your code, deploying to pre-production environments, testing your application, and releasing it to production. AWS Code Pipeline then builds, tests, and deploys your application according to the defined workflow every time there is a code change. You can integrate partner tools and your own custom tools into any stage of the release process to form an end-to-end continuous delivery solution.

Q: Why should I use AWS Code Pipeline?

By automating your build, test, and release processes, AWS Code Pipeline enables you to increase the speed and quality of your software updates by running all new changes through a consistent set of quality checks.

Q: What is continuous delivery?

Continuous delivery is a software development practice where code changes are automatically built, tested, and prepared for a release to production. AWS Code Pipeline is a service that helps you practice continuous delivery. Learn more about continuous delivery [here](#).

Amazon Web Services or AWS is a platform by Amazon.com for providing a wide assortment of cloud computing services. AWS does not involve building an in-house data center or general-purpose leasing servers. You can assume AWS as a collection of different cloud computing services and applications with higher ease of use, flexibility, and reliability.

Cloud Computing and Types of Cloud

AWS cheat sheet should contain information about cloud computing and the three basic types of cloud. Cloud computing is an internet-based computing service that involves a network of various remote servers. Cloud computing helps in centralized data storage and accessing computer services and resources. The three types of cloud are a public, private, and hybrid cloud. Public cloud involves a third-party service provider giving resources and services to customers through the internet.

The private cloud involves the provision and management of resources and services specifically for a particular company. A hybrid cloud involves a combination of public and private cloud traits. The description of types of cloud in AWS cheat sheet 2019 helps in choosing the right alternative for specific use cases. For example, parameters such as the sensitivity of data and required industry certifications can influence the choice of cloud services.

Impact of AWS

The effect of AWS also forms an important part of this AWS cheat sheet 2019. You can obtain a clear idea about the impact of AWS and the potential trends for the future. Almost every organization with a computer could have a use case relevant to AWS services. AWS is a reliable alternative for conventional solutions such as with S3 Glacier that is effective for offsite backups.

AWS initially started as a cloud-based solution for storage and computing services. However, now AWS applies to almost any area such as databases, business productivity, virtual desktops, IoT development, machine learning, and analytics. Also, AWS provides better flexibility for growth of startups with limited resources for funding traditional datacenter deployments.

AWS Regions, AZs, and Edge Locations

One of the important terms in the AWS glossary is the AWS regions. These entries in the AWS cheat sheet inform about an important aspect of AWS landscape. AWS regions are separate and independent geographic areas completely isolated from other regions. The AWS regions are ideally

stationed for achieving the highest possible stability and fault tolerance. The concept of AZ or Availability Zone also emerges with the presence of many AZs within a particular AWS region.

The communication between different regions involves the public internet. The different AZs are physically isolated and separated from each other, and each AZ is an independent failure zone. The connections between AZs are low-latency private links without public internet. You can find Edge locations under the maintenance of AWS for creating a worldwide datacenter network for content distribution.

AWS Services and Products

The most important element in an AWS terminology cheat sheet refers to the different types of resources provided by AWS. An outline of the various categories of AWS services in this cheat sheet could help in understanding the AWS products. The different AWS services are ideal for:

- Networking and content delivery.
- Computing.
- Storage.
- Databases.
- Analytics.
- Security, Identity and Compliance.
- Management tools.
- Application services.
- Developer tools.
- Mobile services.
- AR & VR.
- AWS cost management.
- Blockchain.
- Enterprise apps.
- Customer engagement.
- End User computing.
- Game Tech.
- Internet of Things.
- Machine Learning.
- Migration and transfer.
- Robotics.
- Satellite.

The AWS services cheat sheet is incomplete without an illustration of individual products in each service category.

The objective of an AWS services cheat sheet is to provide readers with a basic idea of the types of services on AWS. Since we have covered that in the previous section, now let us prepare an AWS products cheat sheet! We know that AWS has different services. So, would it hurt to know what products it can offer for each service?

Networking and Content Delivery

The different products in the networking and content delivery services of AWS are as follows:

- Amazon Virtual Private Cloud (VPC)

AWS VPC helps in provisioning a logically isolated section of the AWS cloud for launching AWS resources in a virtual network. VPC provides better control over the virtual networking environment.

Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways. You can use both IPv4 and IPv6 in your VPC for secure and easy access to resources and applications.

You can easily customize the network configuration of your Amazon VPC. For example, you can create a public-facing subnet for your web servers that have access to the internet. You can also place your backend systems, such as databases or application servers, in a private-facing subnet with no internet access. You can use multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.

AWS PrivateLink is one of the prominent mentions in a new AWS cheat sheet. It provides better data security and private connectivity between AWS services, VPCs, and on-premises applications.

AWS PrivateLink simplifies the security of data shared with cloud-based applications by eliminating the exposure of data to the public Internet. AWS Private Link provides private connectivity between VPCs, AWS services, and on-premises applications, securely on the Amazon network. AWS Private Link makes it easy to

Amazon CloudFront is the ideal content delivery network (CDN) of AWS. It helps in the secure delivery of data, applications, APIs, and videos to customers all over the world.

Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency, high transfer speeds, all within a developer-friendly environment. CloudFront is integrated with AWS – both physical locations that are directly connected to the AWS global infrastructure, as well as other AWS services. CloudFront works seamlessly with services including AWS Shield for DDoS mitigation, Amazon S3, Elastic Load Balancing or Amazon EC2 as origins for your applications, and Lambda@Edge to run custom code closer to customers' users and to customize the user experience. Lastly, if you use AWS origins such as Amazon S3, Amazon EC2 or Elastic Load Balancing, you don't pay for any data transferred between these services and CloudFront.

You can get started with the Content Delivery Network in minutes, using the same AWS tools that you're already familiar with: APIs, AWS Management Console, AWS CloudFormation, CLIs, and SDKs. Amazon's CDN offers a simple, pay-as-you-go pricing model with no upfront fees or required long-term contracts, and support for the CDN is included in your existing AWS Support subscription.

The Domain Name System (DNS) web service of AWS is ideal for routing end users to internet applications. Route 53 is crucial for connecting user requests to infrastructure running on AWS.

Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications by translating names like `www.example.com` into the numeric IP addresses like `192.0.2.1` that computers use to connect to each other. Amazon Route 53 is fully compliant with IPv6 as well.

Amazon Route 53 effectively connects user requests to infrastructure running in AWS – such as Amazon EC2 instances, Elastic Load Balancing load balancers, or Amazon S3 buckets – and can also be used to route users to infrastructure outside of AWS. You can use Amazon Route 53 to configure DNS health checks to route traffic to healthy endpoints or to independently monitor the health of your application and its endpoints. Amazon Route 53 Traffic Flow makes it easy for you to manage traffic globally through a variety of routing types, including Latency Based Routing, Geo DNS, Geoproximity, and Weighted Round Robin—all of which can be combined with DNS Failover in order to enable a variety of low-latency, fault-tolerant architectures. Using Amazon Route 53 Traffic Flow's simple visual editor, you can easily manage how your end-users are routed to your application's endpoints—whether in a single AWS region or distributed around the globe. Amazon Route 53 also offers Domain Name Registration – you can purchase and manage domain names such as `example.com` and Amazon Route 53 will automatically configure DNS settings for your domains.

AWS Direct Connect is a cloud service solution for establishing a dedicated network connection between on-premises and AWS.

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The [Cloud Map](#) is one of the latest entries in AWS glossary. It is the cloud resource discovery service on AWS that helps in registering application resources. This AWS product also helps in checking the health of resources consistently.

AWS Cloud Map is a cloud resource discovery service. With Cloud Map, you can define custom names for your application resources, and it maintains the updated location of these dynamically changing resources. This increases your application availability because your web service always discovers the most up-to-date locations of its resources.

Modern applications are typically composed of multiple services that are accessible over an API and perform a specific function. Each service interacts with a variety of other resources, such as databases, queues, object stores, and customer-defined microservices, and it needs to be able to find the location of all the infrastructure resources on which it depends to function. In most cases, you manage all these resource names and their locations manually within the application code. However, manual resource management becomes time consuming and error prone as the number of dependent infrastructure resources increases or the number of microservices dynamically scale up and down based on traffic. You can also use third-party service discovery products, but this requires installing and managing additional software and infrastructure.

Cloud Map allows you to register any application resources, such as databases, queues, microservices, and other cloud resources, with custom names. Cloud Map then constantly checks the health of resources to make sure the location is up-to-date. The application can then query the registry for the location of the resources needed based on the application version and deployment environment

The App Mesh is a service mesh for easier application-level networking and communication between services across various types of infrastructure.

AWS App Mesh is a service mesh that provides application-level networking to make it easy for your services to communicate with each other across multiple types of compute infrastructure. App Mesh standardizes how your services communicate, giving you end-to-end visibility and ensuring high-availability for your applications.

Modern applications are typically composed of multiple services. Each service may be built using multiple types of compute infrastructure such as Amazon EC2 and AWS Fargate. As the number of services grow within an application, it becomes difficult to pinpoint the exact location of errors, re-route traffic after failures, and safely deploy code changes. Previously, this has required you to build monitoring and control logic directly into your code and redeploy your service every time there are changes.

AWS App Mesh makes it easy to run services by providing consistent visibility and network traffic controls for services built across multiple types of compute infrastructure. App Mesh removes the need to update application code to change how monitoring data is collected or traffic is routed between services. App Mesh configures each service to export monitoring data and implements consistent communications control logic across your application. This makes it easy to quickly pinpoint the exact location of errors and automatically re-route network traffic when there are failures or when code changes need to be deployed.

You can use App Mesh with AWS Fargate, Amazon EC2, Amazon ECS, Amazon EKS, and Kubernetes running on AWS, to better run your application at scale. App Mesh also integrates with AWS Outposts for your applications running on-premises. App Mesh uses the open-source Envoy proxy, making it compatible with a wide range of AWS partner and open-source tools.

The Transit Gateway is an AWS networking and CDN product. It helps in connecting Amazon VPCs and on-premises networks with a single gateway.

AWS Transit Gateway connects VPCs and on-premises networks through a central hub. This simplifies your network and puts an end to complex peering relationships. It acts as a cloud router – each new connection is only made once.

As you expand globally, inter-Region peering connects AWS Transit Gateways together using the AWS global network. Your data is automatically encrypted, and never travels over the public internet. And, because of its central position, AWS Transit Gateway Network Manager has a unique view over your entire network, even connecting to Software-Defined Wide Area Network (SD-WAN) devices.

Global Accelerator is one of the prominent additions among AWS terms recently. It is a networking service for improving the availability and performance of applications offered to global users.

AWS Global Accelerator is a service that improves the availability and performance of your applications with local or global users. It provides static IP addresses that act as a fixed entry point to your application endpoints in a single or multiple AWS Regions, such as your Application Load Balancers, Network Load Balancers or Amazon EC2 instances.

AWS Global Accelerator uses the AWS global network to optimize the path from your users to your applications, improving the performance of your traffic by as much as 60%. You can test the performance benefits from your location with a speed comparison tool. AWS Global Accelerator continually monitors the health of your application endpoints and redirects traffic to healthy endpoints in less than 30 seconds

Elastic Load Balancing

Elastic Load Balancing automatically distributes incoming application traffic across multiple targets, such as Amazon EC2 instances, containers, IP addresses, and Lambda functions. It can handle the varying load of your application traffic in a single Availability Zone or across multiple Availability Zones. Elastic Load Balancing offers three types of load balancers that all feature the high availability, automatic scaling, and robust security necessary to make your applications fault tolerant.

EBS is a helpful product for the automatic distribution of incoming application traffic among multiple targets.

Amazon Elastic Block Store (EBS) is an easy to use, high performance block storage service designed for use with Amazon Elastic Compute Cloud (EC2) for both throughput and transaction intensive workloads at any scale. A broad range of workloads, such as relational and non-relational databases, enterprise applications, containerized applications, big data analytics engines, file systems, and media workflows are widely deployed on Amazon EBS.

You can choose from four different volume types to balance optimal price and performance. You can achieve single digit-millisecond latency for high performance database workloads such as SAP HANA or gigabyte per second throughput for large, sequential workloads such as Hadoop. You can change volume types, tune performance, or increase volume size without disrupting your critical applications, so you have cost-effective storage when you need it.

Designed for mission-critical systems, EBS volumes are replicated within an Availability Zone (AZ) and can easily scale to petabytes of data. Also, you can use EBS Snapshots with automated lifecycle policies to back up your volumes in Amazon S3, while ensuring geographic protection of your data and business continuity.

EC2 provides virtual servers capable of giving scalable computing capacity on the cloud.

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment.

7x fewer downtime hours than the next largest cloud provider* Millions of customers ranging from enterprises to startups 24 regions and 76 availability zones globally 300+ instances for virtually every business need

EC2 Auto Scaling is a reliable tool for maintaining application availability and automatic addition or exclusion of EC2 instances. Amazon EC2 Auto Scaling helps you maintain application availability and allows you to automatically add or remove EC2 instances according to conditions you define. You can use the fleet management features of EC2 Auto Scaling to maintain the health and availability of your fleet. You can also use the dynamic and predictive scaling features of EC2 Auto Scaling to add or remove EC2 instances. Dynamic scaling responds to changing demand and predictive scaling automatically schedules the right number of EC2 instances based on predicted demand. Dynamic scaling and predictive scaling can be used together to scale faster.

The Elastic Container Service is a comparatively new addition to the AWS glossary. It is a container orchestration service with support for Docker containers and higher performance and scalability.

Amazon Elastic Container Service (Amazon ECS) is a fully managed container orchestration service. Customers such as Duolingo, Samsung, GE, and Cookpad use ECS to run their most sensitive and mission critical applications because of its security, reliability, and scalability.

ECS is a great choice to run containers for several reasons. First, you can choose to run your ECS clusters using AWS Fargate, which is serverless compute for containers. Fargate removes the need to provision and manage servers, lets you specify and pay for resources per application, and improves security through application isolation by design. Second, ECS is used extensively within Amazon to power services such as Amazon SageMaker, AWS Batch, Amazon Lex, and Amazon.com's recommendation engine, ensuring ECS is tested extensively for security, reliability, and availability.

Additionally, because ECS has been a foundational pillar for key Amazon services, it can natively integrate with other services such as Amazon Route 53, Secrets Manager, AWS Identity and Access Management (IAM), and Amazon CloudWatch providing you a familiar experience to deploy and scale your containers. ECS is also able to quickly integrate with other AWS services to bring new capabilities to ECS. For example, ECS allows your applications the flexibility to use a mix of Amazon EC2 and AWS Fargate with Spot and On-Demand pricing options. ECS also integrates with AWS App Mesh, which is a service mesh, to bring rich observability, traffic controls and security features to your applications. ECS has grown rapidly since launch and is currently launching 5X more containers every hour than EC2 launches instances.

Amazon Elastic Container Service for Kubernetes is fit for easier deployment, management, and scaling containerized applications through Kubernetes on AWS.

Amazon Elastic Container Service for Kubernetes (Amazon EKS) is a fully managed service that makes it easy for you to use Kubernetes on AWS without having to be an expert in managing Kubernetes clusters. There are few things that we think developers will really like about this service. First, Amazon EKS runs the upstream version of the open-source Kubernetes software, so you can use all the existing plugins and tooling from the Kubernetes community. Applications running on Amazon EKS are fully compatible with applications running on any standard Kubernetes environment, whether running in on-premises datacenters or public clouds. This means that you can easily migrate your Kubernetes application to Amazon EKS with zero code changes. Second, Amazon EKS automatically runs K8s with three masters across three AZs to protect against a single point of failure. This multi-AZ architecture delivers resiliency against the loss of an AWS Availability Zone.

Amazon ECR completely managed Docker container registry provides ease of storing, management, and deployment of Docker container images.

Amazon Elastic Container Registry (ECR) is a fully managed Docker container registry that makes it easy for developers to store, manage, and deploy Docker container images. Amazon ECR is integrated with Amazon Elastic Container Service (ECS), simplifying your development to production workflow. Amazon ECR eliminates the need to operate your own container repositories or worry about scaling the underlying infrastructure. Amazon ECR hosts your images in a highly available and scalable architecture, allowing you to reliably deploy containers for your applications. Integration with AWS Identity and Access Management (IAM) provides resource-level control of each repository. With Amazon ECR, there are no upfront fees or commitments. You pay only for the data you store in your repositories and data transferred to the Internet.

Lightsail is the perfect product in AWS terminology cheat sheet for using AWS for simple virtual private server (VPS) solutions.

Lightsail is an easy-to-use cloud platform that offers you everything needed to build an application or website, plus a cost-effective, monthly plan. Whether you are new to the cloud or looking to get on the cloud quickly with AWS infrastructure you trust, we have got you covered. Lightsail is ideal for simpler workloads, quick deployments, and getting started on AWS. It is designed to help you start small, and then scale as you grow.

AWS Batch is helpful for the dynamic provision of the right quantity and type of compute resources. AWS Batch is fit for running multiple batch computing jobs on AWS with ease and efficiency.

AWS Batch enables developers, scientists, and engineers to easily and efficiently run hundreds of thousands of batch computing jobs on AWS. AWS Batch dynamically provisions the optimal quantity and type of compute resources (e.g., CPU or memory optimized instances) based on the volume and specific resource requirements of the batch jobs submitted. With AWS Batch, there is no need to install and manage batch computing software or server clusters that you use to run your jobs, allowing you to focus on analyzing results and solving problems. AWS Batch plans, schedules, and executes your batch computing workloads across the full range of AWS compute services and features, such as Amazon EC2 and Spot Instances. There is no additional charge for AWS Batch. You only pay for the AWS resources (e.g. EC2 instances) you create to store and run your batch jobs.

Elastic Beanstalk serves as an application container for container deployment and management.

AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

You can simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring. At the same time, you retain full control over the AWS resources powering your application and can access the underlying resources at any time.

There is no additional charge for Elastic Beanstalk - you pay only for the AWS resources needed to store and run your applications.

Fargate is a compute engine for Amazon ECS and helps in running containers without managing servers or clusters.

AWS Fargate is a serverless compute engine for containers that works with both Amazon Elastic Container Service (ECS) and Amazon Elastic Kubernetes Service (EKS). Fargate makes it easy for you to focus on building your applications. Fargate removes the need to provision and manage servers, lets you specify and pay for resources per application, and improves security through application isolation by design. Fargate allocates the right amount of compute, eliminating the need to choose instances and scale cluster capacity. You only pay for the resources required to run your containers, so there is no over-provisioning and paying for additional servers. Fargate runs each task or pod in its own kernel providing the tasks and pods their own isolated compute environment. This enables your application to have workload isolation and improved security by design. This is why customers such as Vanguard, Accenture, Foursquare, and Ancestry have chosen to run their mission critical applications on Fargate.

AWS Lambda is one of the significant AWS terms for ensuring responsive execution of code and automatic management of computing resources.

AWS Lambda lets you run code without provisioning or managing servers. You pay only for the compute time you consume. With Lambda, you can run code for virtually any type of application or backend service - all with zero administration. Just upload your code and Lambda takes care of everything required to run and scale your code with high availability. You can set up your code to automatically trigger from other AWS services or call it directly from any web or mobile app.

As the name implies, AWS Serverless Application Repository provides a managed repository for storing serverless applications.

The AWS Serverless Application Repository is a managed repository for serverless applications. It enables teams, organizations, and individual developers to store and share reusable applications, and easily assemble and deploy serverless architectures in powerful new ways. Using the Serverless Application Repository, you do not need to clone, build, package, or publish source code to AWS before deploying it. Instead, you can use pre-built applications from the Serverless Application Repository in your serverless architectures, helping you and your teams reduce duplicated work, ensure organizational best practices, and get to market faster. Integration with AWS Identity and Access Management (IAM) provides resource-level control of each application, enabling you to publicly share applications with everyone or privately share them with specific AWS accounts. To share an application you have built, publish it to the AWS Serverless Application Repository.

Each application is packaged with an AWS Serverless Application Model (SAM) template that defines the AWS resources used. Publicly shared applications also include a link to the application's source code. There is no additional charge to use the Serverless Application Repository - you only pay for the AWS resources used in the applications you deploy.

AWS VMware provides the opportunity for migrating on-premises VMware based environments to AWS cloud.

VMware and AWS offer organizations a faster, secure path to the cloud. Use your current skills, processes, and governance to deliver secure virtual apps and desktops with our Virtual Desktop Infrastructure (VDI) solutions to enable employees to work securely from any location. With VMware Cloud™ on AWS you can migrate datacenters to the cloud for rapid datacenter evacuation, disaster recovery, and application modernization. With over 3 years of joint engineering, VMware and AWS provide organizations with enhanced VMware functionalities integrated in the solution and a single point of contact for support and service integration. Therefore VMware Cloud on AWS is our preferred service for all vSphere workloads.

Now available, Amazon EC2 i3en.metal instances for VMware Cloud on AWS, powered by Intel® Xeon® Scalable processors, deliver high networking throughput and lower latency. You can read more here and view the recent interview by the CUBE to learn how these instances optimize data-intensive workloads requiring high random I/O access such as relational databases and workloads that require end to end security.

AWS Outposts is still in the review stage for the AWS cheat sheet 2019. It can help in obtaining the facilities of AWS services, operating models, and infrastructure to any datacenter.

AWS Outposts is a fully managed service that extends AWS infrastructure, AWS services, APIs, and tools to virtually any datacenter, co-location space, or on-premises facility for a truly consistent hybrid experience. AWS Outposts is ideal for workloads that require low latency access to on-premises systems, local data processing, or local data storage.

AWS Outposts offers you the same AWS hardware infrastructure, services, APIs, and tools to build and run your applications on premises and in the cloud for a truly consistent hybrid experience. AWS compute, storage, database, and other services run locally on Outposts, and you can access the full range of AWS services available in the Region to build, manage, and scale your on-premises applications using familiar AWS services and tools.

Outposts are connected to the nearest AWS Region to provide the same management and control plane services on premises for a truly consistent operational experience across your on-premises and cloud environments. Your Outposts infrastructure and AWS services are managed, monitored, and updated by AWS just like in the cloud.

To get started with Outposts, log-in to the AWS Management Console to create a site, select an Outpost configuration, and place your order.

Coming soon in 2020, a VMware variant of AWS Outposts will be available. VMware Cloud on AWS Outposts delivers a fully managed VMware Software-Defined Data Center (SDDC) running on AWS Outposts infrastructure on premises.

Amazon S3 helps in storing almost any type of data object or flat files in the cloud.

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides easy-to-use management features so you can organize your data and configure finely-tuned access controls to meet your specific business, organizational, and compliance requirements. Amazon S3 is designed for 99.999999999% (11 9's) of durability, and stores data for millions of applications for companies all around the world.

EBS helps in providing persistent block storage volumes with Amazon EC2 instances in the AWS cloud.

Amazon Elastic Block Store (EBS) is an easy to use, high performance block storage service designed for use with Amazon Elastic Compute Cloud (EC2) for both throughput and transaction intensive workloads at any scale. A broad range of workloads, such as relational and non-relational databases, enterprise applications, containerized applications, big data analytics engines, file systems, and media workflows are widely deployed on Amazon EBS.

You can choose from four different volume types to balance optimal price and performance. You can achieve single digit-millisecond latency for high performance database workloads such as SAP HANA or gigabyte per second throughput for large, sequential workloads such as Hadoop. You can change volume types, tune performance, or increase volume size without disrupting your critical applications, so you have cost-effective storage when you need it.

Designed for mission-critical systems, EBS volumes are replicated within an Availability Zone (AZ) and can easily scale to petabytes of data. Also, you can use EBS Snapshots with automated lifecycle policies to back up your volumes in Amazon S3, while ensuring geographic protection of your data and business continuity.

Amazon EFS gives a simple and elastic file system for Linux-based workloads.

Amazon Elastic File System (Amazon EFS) provides a simple, scalable, fully managed elastic NFS file system for use with AWS Cloud services and on-premises resources. It is built to scale on demand to petabytes without disrupting applications, growing, and shrinking automatically as you add and remove files, eliminating the need to provision and manage capacity to accommodate growth. Amazon EFS offers two storage classes: The Standard storage class, and the Infrequent Access storage class (EFS IA). EFS IA provides price/performance that is cost-optimized for files did not access every day. By simply enabling EFS Lifecycle Management on your file system, files not accessed according to the lifecycle policy you choose will be automatically and transparently moved into EFS IA. The EFS IA storage class costs only \$0.025/GB-month*.

While workload patterns vary, customers typically find that 80% of files are infrequently accessed (and suitable for EFS IA), and 20% are actively used (suitable for EFS Standard), resulting in an effective storage cost as low as \$0.08/GB-month*. Amazon EFS transparently serves files from both storage classes in a common file system namespace.

Amazon EFS is designed to provide massively parallel shared access to thousands of Amazon EC2 instances, enabling your applications to achieve high levels of aggregate throughput and IOPS with consistent low latencies.

Amazon EFS is well suited to support a broad spectrum of use cases from home directories to business-critical applications. Customers can use EFS to lift-and-shift existing enterprise applications to the AWS Cloud. Other use cases include big data analytics, web serving and content management, application development and testing, media and entertainment workflows, database backups, and container storage.

Amazon EFS is a regional service storing data within and across multiple Availability Zones (AZs) for high availability and durability. Amazon EC2 instances can access your file system across AZs, regions, and VPCs, while on-premises servers can access using AWS Direct Connect or AWS VPN.

Amazon S3 Glacier is the ideal source for secure and durable low-cost storage for cold data.

Amazon S3 Glacier and S3 Glacier Deep Archive are a secure, durable, and extremely low-cost Amazon S3 cloud storage classes for data archiving and long-term backup. They are designed to deliver 99.999999999% durability and provide comprehensive security and compliance capabilities that can help meet even the most stringent regulatory requirements. Customers can store data for as little as \$1 per terabyte per month, a significant savings compared to on-premises solutions. To keep costs low yet suitable for varying retrieval needs, Amazon S3 Glacier provides three options for access to archives, from a few minutes to several hours, and S3 Glacier Deep Archive provides two access options ranging from 12 to 48 hours.

AWS Storage Gateway is not new in the AWS terminology cheat sheet. It is a hybrid storage service for enabling on-premises applications for seamless AWS cloud storage applications.

AWS Storage Gateway is a hybrid cloud storage service that gives you on-premises access to virtually unlimited cloud storage. Customers use Storage Gateway to simplify storage management and reduce costs for key hybrid cloud storage use cases. These include moving backups to the cloud, using on-premises file shares backed by cloud storage, and providing low latency access to data in AWS for on-premises applications.

To support these use cases, Storage Gateway offers three different types of gateways – File Gateway, Tape Gateway, and Volume Gateway – that seamlessly connect on-premises applications to cloud storage, caching data locally for low-latency access. Your applications connect to the service through a virtual machine or gateway hardware appliance using standard storage protocols, such as NFS, SMB, and iSCSI. The gateway connects to AWS storage services, such as Amazon S3, Amazon S3 Glacier, Amazon S3 Glacier Deep Archive, Amazon EBS, and AWS Backup, providing storage for files, volumes, snapshots, and virtual tapes in AWS. The service includes a highly optimized and efficient data transfer mechanism, with bandwidth management and automated network resilience.

Snow Family comprises of various physical devices and capacity points primarily suited for data transfer in and out of AWS. Applications are moving to the cloud faster today than ever before. A new category of applications requires increased capabilities and performance at the edge of the cloud, or even beyond the edge of the network.

AWS provides edge infrastructure and software that moves data processing and analysis as close as necessary to where data is created in order to deliver intelligent, real-time responsiveness and streamline the amount of data transferred. This includes deploying AWS managed hardware and software to locations outside AWS Regions and even beyond AWS Outposts.

The AWS Snow Family helps customers that need to run operations in austere, non-data center environments, and in locations where there's lack of consistent network connectivity. The Snow Family, comprised of AWS Snowcone, AWS Snowball, and AWS Snowmobile, offers a number of physical devices and capacity points, most with built-in computing capabilities. These services help physically transport up to exabytes of data into and out of AWS. Snow Family devices are owned and managed by AWS and integrate with AWS security, monitoring, storage management, and computing capabilities.

Amazon FSx for Lustre is another name in AWS cheat sheet. It is a high-performance file system tailored for faster workload processing.

Amazon FSx for Lustre makes it easy and cost effective to launch and run the world's most popular high-performance file system. Use it for workloads where speed matters, such as machine learning, high performance computing (HPC), video processing, and financial modeling. The open source Lustre file system is designed for applications that require fast storage – where you want your storage to keep up with your compute. Lustre was built to quickly and cost effectively process the fastest-growing data sets in the world, and it's the most widely used file system for the 500 fastest computers in the world. It provides sub-millisecond latencies, up to hundreds of gigabytes per second of throughput, and millions of IOPS.

Now as a fully managed service, Amazon FSx enables you to use Lustre file systems for any workload where storage speed matters. It eliminates the traditional complexity of setting up and managing Lustre file systems, allowing you to spin up a high-performance file system in minutes. It also provides multiple deployment options to optimize cost.

FSx for Lustre integrates with Amazon S3, making it easy to process data sets with the Lustre file system. When linked to an S3 bucket, an FSx for Lustre file system transparently presents S3 objects as files and allows you to write changed data back to S3.

This product gives a completely managed native Microsoft Windows file system for easy migration of Windows-based applications.

Amazon FSx for Windows File Server provides fully managed, exceptionally reliable, and scalable file storage that is accessible over the industry-standard Server Message Block (SMB) protocol. It is built on Windows Server, delivering a wide range of administrative features such as user quotas, end-user file restores, and Microsoft Active Directory (AD) integration. It offers single-AZ and multi-AZ deployment options, fully managed backups, and encryption of data at rest and in transit. You can optimize cost and performance for your workload needs with SSD and HDD storage options; and you can scale storage and change the throughput performance of your file system at any time. Amazon FSx file storage is accessible from Windows, Linux, and MacOS compute instances and devices running on AWS or on premises.

AWS Backup is a fully managed backup service of AWS for easy centralization and automation of data backups throughout the AWS landscape.

AWS Backup is a fully managed backup service that makes it easy to centralize and automate the backup of data across AWS services. Using AWS Backup, you can centrally configure backup policies and monitor backup activity for AWS resources, such as Amazon EBS volumes, Amazon EC2 instances, Amazon RDS databases, Amazon DynamoDB tables, Amazon EFS file systems, and AWS Storage Gateway volumes. AWS Backup automates and consolidates backup tasks previously performed service-by-service, removing the need to create custom scripts and manual processes. With just a few clicks in the AWS Backup console, you can create backup policies that automate backup schedules and retention management. AWS Backup provides a fully managed, policy-based backup solution, simplifying your backup management, enabling you to meet your business and regulatory backup compliance requirements.

AWS database services also matter significantly in an AWS cheat sheet.

Amazon Aurora in AWS cheat sheet is not new. It is a relational database compatible with MySQL and PostgreSQL with traits of availability, performance, simplicity, and cost-effectiveness.

Amazon Aurora is a MySQL and PostgreSQL-compatible relational database built for the cloud, that combines the performance and availability of traditional enterprise databases with the simplicity and cost-effectiveness of open-source databases.

Amazon Aurora is up to five times faster than standard MySQL databases and three times faster than standard PostgreSQL databases. It provides the security, availability, and reliability of commercial databases at 1/10th the cost. Amazon Aurora is fully managed by Amazon Relational Database Service (RDS), which automates time-consuming administration tasks like hardware provisioning, database setup, patching, and backups.

Amazon Aurora features a distributed, fault-tolerant, self-healing storage system that auto-scales up to 64TB per database instance. It delivers high performance and availability with up to 15 low-latency read replicas, point-in-time recovery, continuous backup to Amazon S3, and replication across three Availability Zones (AZs).

RDS helps in the easier establishment, operations, and scaling of a relational database on the cloud.

Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups. It frees you to focus on your applications so you can give them the fast performance, high availability, security and compatibility they need. Amazon RDS is available on several database instance types - optimized for memory, performance, or I/O - and provides you with six familiar database engines to choose from, including Amazon Aurora, PostgreSQL, MySQL, MariaDB, Oracle Database, and SQL Server. You can use the AWS Database Migration Service to easily migrate or replicate your existing databases to Amazon RDS.

DynamoDB is a document and key-value pair database that is highly efficient.

Amazon DynamoDB is a key-value and document database that delivers single-digit millisecond performance at any scale. It's a fully managed, multiregion, multimaster, durable database with built-in security, backup and restore, and in-memory caching for internet-scale applications. DynamoDB can handle more than 10 trillion requests per day and can support peaks of more than 20 million requests per second. Many of the world's fastest growing businesses such as Lyft, Airbnb, and Redfin as well as enterprises such as Samsung, Toyota, and Capital One depend on the scale and performance of DynamoDB to support their mission-critical workloads.

Hundreds of thousands of AWS customers have chosen DynamoDB as their key-value and document database for mobile, web, gaming, ad tech, IoT, and other applications that need low-latency data access at any scale. Create a new table for your application and let DynamoDB handle the rest.

ElastiCache is one of the oldest products in the AWS cheat sheet. It is ideal for seamless deployment, execution, and scaling of renowned in-memory data stores compatible with opensource.

Amazon ElastiCache allows you to seamlessly set up, run, and scale popular open-Source compatible in-memory data stores in the cloud. Build data-intensive apps or boost the performance of your existing databases by retrieving data from high throughput and low latency in-memory data stores. Amazon ElastiCache is a popular choice for real-time use cases like Caching, Session Stores, Gaming, Geospatial Services, Real-Time Analytics, and Queuing.

Amazon ElastiCache offers fully managed Redis and Memcached for your most demanding applications that require sub-millisecond response times.

Neptune is a graph database service that is fully managed, fast, and reliable. It helps in building and running applications which can work with highly connected datasets easily

Amazon Neptune is a fast, reliable, fully managed graph database service that makes it easy to build and run applications that work with highly connected datasets. The core of Amazon Neptune is a purpose-built, high-performance graph database engine optimized for storing billions of relationships and querying the graph with milliseconds latency. Amazon Neptune supports popular graph models Property Graph and W3C's RDF, and their respective query languages Apache TinkerPop Gremlin and SPARQL, allowing you to easily build queries that efficiently navigate highly connected datasets. Neptune powers graph use cases such as recommendation engines, fraud detection, knowledge graphs, drug discovery, and network security.

Amazon Neptune is highly available, with read replicas, point-in-time recovery, continuous backup to Amazon S3, and replication across Availability Zones. Neptune is secure with support for HTTPS encrypted client connections and encryption at rest. Neptune is fully managed, so you no longer need to worry about database management tasks such as hardware provisioning, software patching, setup, configuration, or backups.

This is one of the oldest AWS terms which has been in place since 2016. As the name implies, AWS Database Migration Service helps in secure and quick migration of databases to AWS.

AWS Database Migration Service helps you migrate databases to AWS quickly and securely. The source database remains fully operational during the migration, minimizing downtime to applications that rely on the database. The AWS Database Migration Service can migrate your data to and from most widely used commercial and open-source databases. AWS Database Migration

Service supports homogeneous migrations such as Oracle to Oracle, as well as heterogeneous migrations between different database platforms, such as Oracle or Microsoft SQL Server to Amazon Aurora. With AWS Database Migration Service, you can continuously replicate your data with high availability and consolidate databases into a petabyte-scale data warehouse by streaming data to Amazon Redshift and Amazon S3. Learn more about the supported source and target databases. When migrating databases to Amazon Aurora, Amazon Redshift, Amazon DynamoDB or Amazon DocumentDB (with MongoDB compatibility) you can use DMS free for six months.

Timestream is a new, scalable, fast, and fully managed time-series database service. It is ideal for IoT and operational applications and is known for efficient data storage and processing in time intervals.

Amazon Timestream is a fast, scalable, fully managed time series database service for IoT and operational applications that makes it easy to store and analyze trillions of events per day at 1/10th the cost of relational databases. Driven by the rise of IoT devices, IT systems, and smart industrial machines, time-series data — data that measures how things change over time — is one of the fastest growing data types. Time-series data has specific characteristics such as typically arriving in time order form, data is append-only, and queries are always over a time interval. While relational databases can store this data, they are inefficient at processing this data as they lack optimizations such as storing and retrieving data by time intervals. Timestream is a purpose-built time series database that efficiently stores and processes this data by time intervals. With Timestream, you can easily store and analyze log data for DevOps, sensor data for IoT applications, and industrial telemetry data for equipment maintenance. As your data grows over time, Timestream's adaptive query processing engine understands its location and format, making your data simpler and faster to analyze. Timestream also automates rollups, retention, tiering, and compression of data, so you can manage your data at the lowest possible cost. Timestream is serverless, so there are no servers to manage. It manages time-consuming tasks such as server provisioning, software patching, setup, configuration, or data retention and tiering, freeing you to focus on building your applications.

This product is still in preview and can help in deploying a managed database in on-premises VMware environments.

Amazon Relational Database Service (RDS) on VMware lets you deploy managed databases in on-premises VMware environments using the Amazon RDS technology enjoyed by hundreds of thousands of AWS customers. Amazon RDS provides cost-efficient and resizable capacity while automating time-consuming administration tasks including infrastructure provisioning, database setup, patching, and backups, freeing you to focus on your applications. RDS on VMware brings many of these same benefits to your on-premises deployments, making it easy to set up, operate, and scale databases in VMware vSphere private data centers.

RDS on VMware allows you to utilize the same simple interface for managing databases in on-premises VMware vSphere environments as you would use in AWS. RDS on VMware supports MySQL, PostgreSQL, and Microsoft SQL Server databases.

DocumentDB is a highly available and scalable, fully managed document database service with support for MongoDB workloads.

Amazon DocumentDB (with MongoDB compatibility) is a fast, scalable, highly available, and fully managed document database service that supports MongoDB workloads. As a document database, Amazon DocumentDB makes it easy to store, query, and index JSON data.

Amazon DocumentDB is a non-relational database service designed from the ground-up to give you the performance, scalability, and availability you need when operating mission-critical MongoDB workloads at scale. In Amazon DocumentDB, the storage and compute are decoupled, allowing each to scale independently, and you can increase the read capacity to millions of requests per second by adding up to 15 low latency read replicas in minutes, regardless of the size of your data.

Amazon DocumentDB is designed for 99.99% availability and replicates six copies of your data across three AWS Availability Zones (AZs). You can use AWS Database Migration Service (DMS) for free (for six months) to easily migrate your on-premises or Amazon Elastic Compute Cloud (EC2) MongoDB databases to Amazon DocumentDB with virtually no downtime.

The two other products in storage services of AWS include Amazon RedShift and Amazon Quantum Ledger Database. We shall reflect on these products in the Analytics and Blockchain categories, respectively.

Analytics

Analytics have become very important for data-driven organizations in the present time. So, AWS has also introduced certain products for supporting analytics tasks. Let us take a look at the AWS products cheat sheet for the Analytics services category.

Amazon Athena is an interactive query service tailored for easier analysis of data in S3 by leveraging standard SQL. Amazon Athena is an interactive query service that makes it easy to analyze data in Amazon S3 using standard SQL. Athena is serverless, so there is no infrastructure to manage, and you pay only for the queries that you run. Athena is easy to use. Simply point to your data in Amazon S3, define the schema, and start querying using standard SQL. Most results are delivered within seconds. With Athena, there's no need for complex ETL jobs to prepare your data for analysis. This makes it easy for anyone with SQL skills to quickly analyze large-scale datasets. Athena is out-of-the-box integrated with AWS Glue Data Catalog, allowing you to create a unified metadata repository across various services, crawl data sources to discover schemas and populate your Catalog with new and modified table and partition definitions, and maintain schema versioning.

Cloud Search is one of the oldest mentions in AWS cheat sheet. It helps in establishing, managing, and scaling a search solution for a website or application with simplicity and cost-effectiveness.

Amazon Cloud Search is a managed service in the AWS Cloud that makes it simple and cost-effective to set up, manage, and scale a search solution for your website or application. Amazon Cloud Search supports 34 languages and popular search features such as highlighting, autocomplete, and geospatial search.

Amazon Cloud Search supports powerful search features such as:

- Free text, Boolean, and Faceted search

- Autocomplete suggestions
- Customizable relevance ranking and query-time rank expressions
- Field weighting
- Geospatial search
- Highlighting
- Support for 34 languages

Amazon Elasticsearch Service – Users can deploy, secure, and operate Elasticsearch according to scale with zero downtime.

Amazon Elasticsearch Service is a fully managed service that makes it easy for you to deploy, secure, and run Elasticsearch cost effectively at scale. You can build, monitor, and troubleshoot your applications using the tools you love, at the scale you need. The service provides support for open source Elasticsearch APIs, managed Kibana, integration with Logstash and other AWS services, and built-in alerting and SQL querying. Amazon Elasticsearch Service lets you pay only for what you use – there are no upfront costs or usage requirements. With Amazon Elasticsearch Service, you get the ELK stack you need, without the operational overhead.

Elastic Map Reduce or EMR is a product providing a managed Hadoop framework for easier, faster, and cost-effective means for data processing.

Amazon EMR is the industry-leading cloud big data platform for processing vast amounts of data using open-source tools such as Apache Spark, Apache Hive, Apache HBase, Apache Flink, Apache Hudi, and Presto. With EMR you can run Petabyte-scale analysis at less than half of the cost of traditional on-premises solutions and over 3x faster than standard Apache Spark. For short-running jobs, you can spin up and spin down clusters and pay per second for the instances used. For long-running workloads, you can create highly available clusters that automatically scale to meet demand. If you have existing on-premises deployments of open source tools such as Apache Spark and Apache Hive, you can also run EMR clusters on AWS Outposts.

Amazon Kinesis is a prolific tool for collection, processing, and analysis of real-time streaming data to obtain insights and take decisions on time.

Amazon Kinesis makes it easy to collect, process, and analyze real-time, streaming data so you can get timely insights and react quickly to new information. Amazon Kinesis offers key capabilities to cost-effectively process streaming data at any scale, along with the flexibility to choose the tools that best suit the requirements of your application. With Amazon Kinesis, you can ingest real-time data such as video, audio, application logs, website clickstreams, and IoT telemetry data for machine learning, analytics, and other applications. Amazon Kinesis enables you to process and analyze data as it arrives and respond instantly instead of having to wait until all your data is collected before the processing can begin.

RedShift provides a faster and scalable data warehouse for simpler and cost-effective analysis of data in your data lake and data warehouse.

Amazon Redshift is a fully managed petabyte-scale data warehouse service by AWS where data generated by different sources is collected. This data is collected and stored for making the organization's decision.

Amazon QuickSight is an important product for delivery of insights to every individual in the organization.

Amazon QuickSight is a fast, cloud-powered business intelligence service that makes it easy to deliver insights to everyone in your organization. As a fully managed service, QuickSight lets you easily create and publish interactive dashboards that include ML Insights. Dashboards can then be accessed from any device, and embedded into your applications, portals, and websites. With our Pay-per-Session pricing, QuickSight allows you to give everyone access to the data they need, while only paying for what you use.

AWS Data Pipeline is a regular in AWS products cheat sheet. It is a web service for reliable data processing and data migration between compute and storage services on AWS.

AWS Data Pipeline is a web service that helps you reliably process and move data between different AWS compute and storage services, as well as on-premises data sources, at specified intervals. With AWS Data Pipeline, you can regularly access your data where it's stored, transform and process it at scale, and efficiently transfer the results to AWS services such as Amazon S3, Amazon RDS, Amazon DynamoDB, and Amazon EMR.

AWS Data Pipeline helps you easily create complex data processing workloads that are fault tolerant, repeatable, and highly available. You do not have to worry about ensuring resource availability, managing inter-task dependencies, retrying transient failures or timeouts in individual tasks, or creating a failure notification system. AWS Data Pipeline also allows you to move and process data that was previously locked up in on-premises data silos

AWS Glue is an ETL (Extract, Transform, and Load) service for easier preparation and loading of data for analytics.

AWS Glue is a fully managed extract, transform, and load (ETL) service that makes it easy for customers to prepare and load their data for analytics. You can create and run an ETL job with a few clicks in the AWS Management Console. You simply point AWS Glue to your data stored on AWS, and AWS Glue discovers your data and stores the associated metadata (e.g. table definition and schema) in the AWS Glue Data Catalog. Once cataloged, your data is immediately searchable, query able, and available for ETL

This product is helpful for building and running applications using Apache Kafka for processing streaming data

Amazon MSK is a fully managed service that makes it easy for you to build and run applications that use Apache Kafka to process streaming data. Apache Kafka is an open-source platform for building

real-time streaming data pipelines and applications. With Amazon MSK, you can use native Apache Kafka APIs to populate data lakes, stream changes to and from databases, and power machine learning and analytics applications. Apache Kafka clusters are challenging to setup, scale, and manage in production. When you run Apache Kafka on your own, you need to provision servers, configure Apache Kafka manually, replace servers when they fail, orchestrate server patches and upgrades, architect the cluster for high availability, ensure data is durably stored and secured, setup monitoring and alarms, and carefully plan scaling events to support load changes. Amazon MSK makes it easy for you to build and run production applications on Apache Kafka without needing Apache Kafka infrastructure management expertise. That means you spend less time managing infrastructure and more time building applications. With a few clicks in the Amazon MSK console, you can create highly available Apache Kafka clusters with settings and configuration based on Apache Kafka's deployment best practices. Amazon MSK automatically provisions and runs your Apache Kafka clusters. Amazon MSK continuously monitors cluster health and automatically replaces unhealthy nodes with no downtime to your application. In addition, Amazon MSK secures your Apache Kafka cluster by encrypting data at rest.

Lake Formation helps in collection and cataloging of data from databases and data storage. It is ideal for setting up a secure data lake within a limited time.

AWS Lake Formation is a service that makes it easy to set up a secure data lake in days. A data lake is a centralized, curated, and secured repository that stores all your data, both in its original form and prepared for analysis. A data lake enables you to break down data silos and combine different types of analytics to gain insights and guide better business decisions. However, setting up and managing data lakes today involves a lot of manual, complicated, and time-consuming tasks. This work includes loading data from diverse sources, monitoring those data flows, setting up partitions, turning on encryption and managing keys, defining transformation jobs and monitoring their operation, re-organizing data into a columnar format, configuring access control settings, deduplicating redundant data, matching linked records, granting access to data sets, and auditing access over time. Creating a data lake with Lake Formation is as simple as defining data sources and what data access and security policies you want to apply. Lake Formation then helps you collect and catalog data from databases and object storage, move the data into your new Amazon S3 data lake, clean and classify your data using machine learning algorithms, and secure access to your sensitive data. Your users can access a centralized data catalog which describes available data sets and their appropriate usage. Your users then leverage these data sets with their choice of analytics and machine learning services, like Amazon Redshift, Amazon Athena, and (in beta) Amazon EMR for Apache Spark. Lake Formation builds on the capabilities available in AWS Glue.

Security and Identity Management

Security and identity are other formidable principles of AWS service. The common entries in AWS cheat sheet in this category are as follows.

Resource Access Manager service helps in easily sharing AWS resources with the highest security possible.

AWS Resource Access Manager (RAM) is a service that enables you to easily and securely share AWS resources with any AWS account or within your AWS Organization. You can share AWS Transit Gateways, Subnets, AWS License Manager configurations, and Amazon Route 53 Resolver rules

resources with RAM. Many organizations use multiple accounts to create administrative or billing isolation, and to limit the impact of errors. RAM eliminates the need to create duplicate resources in multiple accounts, reducing the operational overhead of managing those resources in every single account you own. You can create resources centrally in a multi-account environment, and use RAM to share those resources across accounts in three simple steps: create a Resource Share, specify resources, and specify accounts. RAM is available to you at no additional charge

AWS IAM in the AWS services cheat sheet is one of the oldest entries. IAM is the go-to option for managing access to AWS services and resources with high security.

AWS Identity and Access Management (IAM) enables you to manage access to AWS services and resources securely. Using IAM, you can create and manage AWS users and groups, and use permissions to allow and deny their access to AWS resources. IAM is a feature of your AWS account offered at no additional charge. You will be charged only for use of other AWS services by your users.

Amazon Cloud Directory helps in building flexible cloud-native directories to ensure appropriate organization of data hierarchy across multiple dimensions.

Amazon Cloud Directory enables you to build flexible cloud-native directories for organizing hierarchies of data along multiple dimensions. With Cloud Directory, you can create directories for a variety of use cases, such as organizational charts, course catalogs, and device registries. While traditional directory solutions, such as Active Directory Lightweight Directory Services (AD LDS) and other LDAP-based directories, limit you to a single hierarchy, Cloud Directory offers you the flexibility to create directories with hierarchies that span multiple dimensions. For example, you can create an organizational chart that can be navigated through separate hierarchies for reporting structure, location, and cost center.

Amazon Cloud Directory automatically scales to hundreds of millions of objects and provides an extensible schema that can be shared with multiple applications. As a fully-managed service, Cloud Directory eliminates time-consuming and expensive administrative tasks, such as scaling infrastructure and managing servers. You simply define the schema, create a directory, and then populate your directory by making calls to the Cloud Directory API.

Amazon Cognito is an effective tool for adding user sign-up, sign-in, and access privileges to web and mobile apps easily and effectively.

Amazon Cognito is an Amazon Web Services (AWS) product that controls user authentication and access for mobile applications on internet-connected devices. The service saves and synchronizes end-user data, which enables an application developer to focus on writing code instead of building and managing the back-end infrastructure.

The Cloud SSO service helps in easier central management of SSO access to multiple business applications and AWS accounts. AWS Single Sign-On (SSO) makes it easy to centrally manage access to multiple AWS accounts and business applications and provide users with single sign-on access to all their assigned accounts and applications from one place. With AWS SSO, you can easily manage access and user permissions to all of your accounts in AWS Organizations centrally. AWS SSO

configures and maintains all the necessary permissions for your accounts automatically, without requiring any additional setup in the individual accounts. You can assign user permissions based on common job functions and customize these permissions to meet your specific security requirements. AWS SSO also includes built-in integrations to many business applications, such as Salesforce, Box, and Office 365. With AWS SSO, you can create and manage user identities in AWS SSO's identity store, or easily connect to your existing identity source, including Microsoft Active Directory, Okta Universal Directory, and Azure Active Directory (Azure AD). It is easy to get started with AWS SSO. With just a few clicks in the AWS SSO management console you can connect AWS SSO to your existing identity source and configure permissions that grant your users access to their assigned AWS Organizations accounts and hundreds of pre-integrated cloud applications, all from a single user portal.

Amazon GuardDuty is a threat-detection service meant for continuous monitoring to find out unauthorized behavior or malicious activity.

Amazon GuardDuty is a threat detection service that continuously monitors for malicious activity and unauthorized behavior to protect your AWS accounts, workloads, and data stored in Amazon S3. With the cloud, the collection and aggregation of account and network activities is simplified, but it can be time consuming for security teams to continuously analyze event log data for potential threats. With GuardDuty, you now have an intelligent and cost-effective option for continuous threat detection in AWS. The service uses machine learning, anomaly detection, and integrated threat intelligence to identify and prioritize potential threats. GuardDuty analyzes tens of billions of events across multiple AWS data sources, such as AWS CloudTrail event logs, Amazon VPC Flow Logs, and DNS logs. With a few clicks in the AWS Management Console, GuardDuty can be enabled with no software or hardware to deploy or maintain. By integrating with Amazon CloudWatch Events, GuardDuty alerts are actionable, easy to aggregate across multiple accounts, and straightforward to push into existing event management and workflow systems.

Inspector is an automated security assessment tool for improving security and compliance for applications with deployment on AWS.

Amazon Inspector is an automated security assessment service that helps improve the security and compliance of applications deployed on AWS. Amazon Inspector automatically assesses applications for exposure, vulnerabilities, and deviations from best practices. After performing an assessment, Amazon Inspector produces a detailed list of security findings prioritized by level of severity. These findings can be reviewed directly or as part of detailed assessment reports which are available via the Amazon Inspector console or API.

Amazon Inspector security assessments help you check for unintended network accessibility of your Amazon EC2 instances and for vulnerabilities on those EC2 instances. Amazon Inspector assessments are offered to you as pre-defined rules packages mapped to common security best practices and vulnerability definitions. Examples of built-in rules include checking for access to your EC2 instances from the internet, remote root login being enabled, or vulnerable software versions installed. These rules are regularly updated by AWS security researchers.

Macie is a security service in this AWS cheat sheet that is an ideal security tool. Macie uses machine learning for automatic discovery, classification, and protection for sensitive data in AWS.

Amazon Macie is a fully managed data security and data privacy service that uses machine learning and pattern matching to discover and protect your sensitive data in AWS.

As organizations manage growing volumes of data, identifying and protecting their sensitive data at scale can become increasingly complex, expensive, and time-consuming. Amazon Macie automates the discovery of sensitive data at scale and lowers the cost of protecting your data. Macie automatically provides an inventory of Amazon S3 buckets including a list of unencrypted buckets, publicly accessible buckets, and buckets shared with AWS accounts outside those you have defined in AWS Organizations. Then, Macie applies machine learning and pattern matching techniques to the buckets you select to identify and alert you to sensitive data, such as personally identifiable information (PII). Macie's alerts, or findings, can be searched and filtered in the AWS Management Console and sent to Amazon CloudWatch Events for easy integration with existing workflow or event management systems, or to be used in combination with AWS services, such as AWS Step Functions to take automated remediation actions. This can help you meet regulations, such as the Health Insurance Portability and Accountability Act (HIPAA) and General Data Privacy Regulation (GDPR). You can get started with Amazon Macie with a few clicks in the AWS Management Console.

AWS certificate manager helps in provisioning, management, and deployment of public and private SSL/TLS certificates with security.

AWS Certificate Manager is an Amazon Web Services tool that allows an IT team to provision, manage and deploy free Secure Sockets Layer (SSL) and Transport Security Layer (TLS) certifications in the AWS cloud.

The CloudHSM is a cloud-based hardware security model (HSM). This product can help in the easy generation and use of its own encryption keys on the AWS cloud.

AWS CloudHSM is a cloud-based hardware security module (HSM) that enables you to easily generate and use your own encryption keys on the AWS Cloud. With CloudHSM, you can manage your own encryption keys using FIPS 140-2 Level 3 validated HSMs. CloudHSM offers you the flexibility to integrate with your applications using industry-standard APIs, such as PKCS#11, Java Cryptography Extensions (JCE), and Microsoft CryptoNG (CNG) libraries.

CloudHSM is standards-compliant and enables you to export all your keys to most other commercially available HSMs, subject to your configurations. It is a fully managed service that automates time-consuming administrative tasks for you, such as hardware provisioning, software patching, high-availability, and backups. CloudHSM also enables you to scale quickly by adding and removing HSM capacity on-demand, with no up-front costs.

The AWS directory service has Microsoft Active Directory as its foundation. It can help in enable AWS resources and directory-aware workloads to use managed Active Directory.

AWS Directory Service for Microsoft Active Directory, also known as AWS Managed Microsoft AD, enables your directory-aware workloads and AWS resources to use managed Active Directory in the AWS Cloud. AWS Managed Microsoft AD is built on actual Microsoft Active Directory and does not require you to synchronize or replicate data from your existing Active Directory to the cloud. You can use standard Active Directory administration tools and take advantage of built-in Active Directory features, such as Group Policy and single sign-on (SSO). With AWS Managed Microsoft AD, you can

easily join Amazon EC2 and Amazon RDS for SQL Server instances to your domain and use AWS Enterprise IT applications such as Amazon WorkSpaces with Active Directory users and groups.

Firewall Manager is a security management service on AWS which helps in easier central configuration and management of AWS WAF rules.

AWS Firewall Manager is a security management service which allows you to centrally configure and manage firewall rules across your accounts and applications in AWS Organization. As new applications are created, Firewall Manager makes it easy to bring new applications and resources into compliance by enforcing a common set of security rules. Now you have a single service to build firewall rules, create security policies, and enforce them in a consistent, hierarchical manner across your entire infrastructure.

Using AWS Firewall Manager, you can easily roll out AWS WAF rules for your Application Load Balancers, API Gateways, and Amazon CloudFront distributions. Similarly, you can create AWS Shield Advanced protections for your Application Load Balancers, ELB Classic Load Balancers, Elastic IP Addresses and CloudFront distributions. Finally, with AWS Firewall Manager, you can enable security groups for your Amazon EC2 and ENI resource types in Amazon VPCs.

AWS Key management service is also one of the notable entries in AWS services cheat sheet. It is a secure and durable service that helps in creating and managing keys alongside establishing control over encryption usage.

AWS KMS is a managed service that is integrated with various other AWS Services. You can use it in your applications to create store and control encryption keys to encrypt your data. KMS allows you to gain more control for access to the data that you encrypt. KMS assures 99.9999999999% durability of the keys.

It also provides high availability as keys are stored in multiple AZ's within a region. KMS is integrated with the CloudTrail. You can audit, for what purpose, by whom and when the key was used which helps to meet compliance and regulatory needs.

Some Noteworthy points you should know about AWS Key Management Service:

- Even though KMS is a global service but keys are regional that means you can't send keys outside the region in which they are created.
- How does AWS KMS protect the confidentiality and integrity of your keys? KMS uses FIPS 140-2 validated HSMs (Hardware Security Modules).
- Whether you are writing your own application or using other AWS services, you can control who can access your master keys and gain access to your data.
- When you are importing keys in KMS make sure to maintain a copy of those keys so that you can re-import them anytime.

This tool can help in safeguarding the secrets that are important for accessing applications, IT resources, and services.

AWS Secrets Manager helps you protect secrets needed to access your applications, services, and IT resources. The service enables you to easily rotate, manage, and retrieve database credentials, API keys, and other secrets throughout their lifecycle. Users and applications retrieve secrets with a call to Secrets Manager APIs, eliminating the need to hardcode sensitive information in plain text.

Secrets Manager offers secret rotation with built-in integration for Amazon RDS, Amazon Redshift, and Amazon DocumentDB. Also, the service is extensible to other types of secrets, including API keys and OAuth tokens. In addition, Secrets Manager enables you to control access to secrets using fine-grained permissions and audit secret rotation centrally for resources in the AWS Cloud, third-party services, and on-premises.

Shield is a type of Distributed Denial of Service (DDoS) mechanism which is fully managed and protects applications on AWS.

AWS Shield is a managed Distributed Denial of Service (DDoS) protection service that safeguards applications running on AWS. AWS Shield provides always-on detection and automatic inline mitigations that minimize application downtime and latency, so there is no need to engage AWS Support to benefit from DDoS protection. There are two tiers of AWS Shield - Standard and Advanced.

All AWS customers benefit from the automatic protections of AWS Shield Standard, at no additional charge. AWS Shield Standard defends against most common, frequently occurring network and transport layer DDoS attacks that target your web site or applications. When you use AWS Shield Standard with Amazon CloudFront and Amazon Route 53, you receive comprehensive availability protection against all known infrastructure (Layer 3 and 4) attacks.

For higher levels of protection against attacks targeting your applications running on Amazon Elastic Compute Cloud (EC2), Elastic Load Balancing (ELB), Amazon CloudFront, AWS Global Accelerator and Amazon Route 53 resources, you can subscribe to AWS Shield Advanced. In addition to the network and transport layer protections that come with Standard, AWS Shield Advanced provides additional detection and mitigation against large and sophisticated DDoS attacks, near real-time visibility into attacks, and integration with AWS WAF, a web application firewall. AWS Shield Advanced also gives you 24x7 access to the AWS DDoS Response Team (DRT) and protection against DDoS related spikes in your Amazon Elastic Compute Cloud (EC2), Elastic Load Balancing (ELB), Amazon CloudFront, AWS Global Accelerator and Amazon Route 53 charges.

AWS Shield Advanced is available globally on all Amazon CloudFront, AWS Global Accelerator, and Amazon Route 53 edge locations. You can protect your web applications hosted anywhere in the world by deploying Amazon CloudFront in front of your application. Your origin servers can be Amazon S3, Amazon Elastic Compute Cloud (EC2), Elastic Load Balancing (ELB), or a custom server outside of AWS. You can also enable AWS Shield Advanced directly on an Elastic IP or Elastic Load Balancing (ELB) in the following AWS Regions - Northern Virginia, Ohio, Oregon, Northern California, Montreal, São Paulo, Ireland, Frankfurt, London, Paris, Stockholm, Singapore, Tokyo, Sydney, Seoul, and Mumbai.

Web Application Firewall is ideal for preventing the vulnerability of web applications. It helps in protecting application availability, resources, and security.

AWS WAF is a web application firewall that helps protect your web applications or APIs against common web exploits that may affect availability, compromise security, or consume excessive resources. AWS WAF gives you control over how traffic reaches your applications by enabling you to create security rules that block common attack patterns, such as SQL injection or cross-site scripting, and rules that filter out specific traffic patterns you define. You can get started quickly using Managed Rules for AWS WAF, a pre-configured set of rules managed by AWS or AWS Marketplace Sellers. The Managed Rules for WAF address issues like the OWASP Top 10 security risks. These rules

are regularly updated as new issues emerge. AWS WAF includes a full-featured API that you can use to automate the creation, deployment, and maintenance of security rules.

With AWS WAF, you pay only for what you use. The pricing is based on how many rules you deploy and how many web requests your application receives. There are no upfront commitments.

You can deploy AWS WAF on Amazon CloudFront as part of your CDN solution, the Application Load Balancer that fronts your web servers or origin servers running on EC2, or Amazon API Gateway for your APIs.

AWS artifacts provide information related to compliance. Artifacts include Service Organization Control (SOC) reports, Payment Card Industry (PCI) reports and other certifications.

AWS Artifact is your go-to, central resource for compliance-related information that matters to you. It provides on-demand access to AWS' security and compliance reports and select online agreements. Reports available in AWS Artifact include our Service Organization Control (SOC) reports, Payment Card Industry (PCI) reports, and certifications from accreditation bodies across geographies and compliance verticals that validate the implementation and operating effectiveness of AWS security controls. Agreements available in AWS Artifact include the Business Associate Addendum (BAA) and the Nondisclosure Agreement (NDA).

AWS Security Hub is also one of the notable names in AWS Glossary which has not made its mark yet. The Security Hub can provide a detailed view of security alerts with high-priority and compliance status of various AWS accounts.

AWS Security Hub gives you a comprehensive view of your high-priority security alerts and security posture across your AWS accounts. There are a range of powerful security tools at your disposal, from firewalls and endpoint protection to vulnerability and compliance scanners. But oftentimes this leaves your team switching back-and-forth between these tools to deal with hundreds, and sometimes thousands, of security alerts every day. With Security Hub, you now have a single place that aggregates, organizes, and prioritizes your security alerts, or findings, from multiple AWS services, such as Amazon GuardDuty, Amazon Inspector, Amazon Macie, AWS Identity and Access Management (IAM) Access Analyzer, and AWS Firewall Manager, as well as from AWS Partner solutions. AWS Security Hub continuously monitors your environment using automated security checks based on the AWS best practices and industry standards that your organization follows. You can also take action on these security findings by investigating them in Amazon Detective or by using Amazon CloudWatch Event rules to send the findings to ticketing, chat, Security Information and Event Management (SIEM), Security Orchestration Automation and Response (SOAR), and incident management tools or to custom remediation playbooks. Get started with AWS Security Hub in just a few clicks in the Management Console and once enabled, Security Hub will begin aggregating and prioritizing findings and conducting security checks.

Management Tools

Finally, another formidable entry among AWS products in this cheat sheet is in the management tools category.

The interactive chatbot helps in monitoring and interaction with AWS resources

AWS Chatbot is an interactive agent that makes it easy to monitor and interact with your AWS resources in your Slack channels and Amazon Chime chat rooms. With AWS Chatbot you can receive alerts, run commands to return diagnostic information, invoke AWS Lambda functions, and create AWS support cases.

AWS Chatbot manages the integration between AWS services and your Slack channels or Amazon Chime chat rooms helping you to get started with ChatOps fast. With just a few clicks you can start receiving notifications and issuing commands in your chosen channels or chat rooms, so your team doesn't have to switch contexts to collaborate. AWS Chatbot makes it easier for your team to stay updated, collaborate, and respond faster to operational events, security findings, CI/CD workflows, budget, and other alerts for applications running in your AWS accounts.

CloudWatch is one of the earliest AWS terms. It serves as a monitoring and management service for developers, site reliability engineers, IT managers, and system operators.

Amazon CloudWatch is a monitoring and observability service built for DevOps engineers, developers, site reliability engineers (SREs), and IT managers. CloudWatch provides you with data and actionable insights to monitor your applications, respond to system-wide performance changes, optimize resource utilization, and get a unified view of operational health. CloudWatch collects monitoring and operational data in the form of logs, metrics, and events, providing you with a unified view of AWS resources, applications, and services that run on AWS and on-premises servers. You can use CloudWatch to detect anomalous behavior in your environments, set alarms, visualize logs and metrics side by side, take automated actions, troubleshoot issues, and discover insights to keep your applications running smoothly.

Auto Scaling is an important addition in AWS terminology cheat sheet. It helps in monitoring applications and automatic capacity adjustments.

AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, it's easy to setup application scaling for multiple resources across multiple services in minutes. The service provides a simple, powerful user interface that lets you build scaling plans for resources including Amazon EC2 instances and Spot Fleets, Amazon ECS tasks, Amazon DynamoDB tables and indexes, and Amazon Aurora Replicas. AWS Auto Scaling makes scaling simple with recommendations that allow you to optimize performance, costs, or balance between them. If you're already using Amazon EC2 Auto Scaling to dynamically scale your Amazon EC2 instances, you can now combine it with AWS Auto Scaling to scale additional resources for other AWS services. With AWS Auto Scaling, your applications always have the right resources at the right time.

It's easy to get started with AWS Auto Scaling using the AWS Management Console, Command Line Interface (CLI), or SDK. AWS Auto Scaling is available at no additional charge. You pay only for the AWS resources needed to run your applications and Amazon CloudWatch monitoring fees.

CloudFormation is the common terminology for describing and provisioning of all infrastructure resources in a cloud environment.

AWS CloudFormation provides a common language for you to model and provision AWS and third-party application resources in your cloud environment. AWS CloudFormation allows you to use

programming languages or a simple text file to model and provision, in an automated and secure manner, all the resources needed for your applications across all regions and accounts. This gives you a single source of truth for your AWS and third-party resources.

CloudTrail is a service for ensuring governance, compliance, operational auditing, and risk auditing functions.

AWS CloudTrail is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account. With CloudTrail, you can log, continuously monitor, and retain account activity related to actions across your AWS infrastructure. CloudTrail provides event history of your AWS account activity, including actions taken through the AWS Management Console, AWS SDKs, command line tools, and other AWS services. This event history simplifies security analysis, resource change tracking, and troubleshooting. In addition, you can use CloudTrail to detect unusual activity in your AWS accounts. These capabilities help simplify operational analysis and troubleshooting.

Config service helps in the assessment, auditing, and evaluation of AWS resource configurations.

AWS Config is a service that enables you to assess, audit, and evaluate the configurations of your AWS resources. Config continuously monitors and records your AWS resource configurations and allows you to automate the evaluation of recorded configurations against desired configurations. With Config, you can review changes in configurations and relationships between AWS resources, dive into detailed resource configuration histories, and determine your overall compliance against the configurations specified in your internal guidelines. This enables you to simplify compliance auditing, security analysis, change management, and operational troubleshooting.

OpsWorks is a configuration management service for providing managed instances of Puppet and Chef.

AWS OpsWorks is a configuration management service that provides managed instances of Chef and Puppet. Chef and Puppet are automation platforms that allow you to use code to automate the configurations of your servers. OpsWorks lets you use Chef and Puppet to automate how servers are configured, deployed, and managed across your Amazon EC2 instances or on-premises compute environments. OpsWorks has three offerings, AWS Opsworks for Chef Automate, AWS OpsWorks for Puppet Enterprise, and AWS OpsWorks Stacks.

This product in the AWS cheat sheet 2019 helps businesses in the creation and management of catalogs for AWS-approved IT services.

AWS Service Catalog allows organizations to create and manage catalogs of IT services that are approved for use on AWS. These IT services can include everything from virtual machine images, servers, software, and databases to complete multi-tier application architectures. AWS Service Catalog allows you to centrally manage commonly deployed IT services, and helps you achieve consistent governance and meet your compliance requirements, while enabling users to quickly deploy only the approved IT services they need.

The AWS systems manager is an ideal tool for better transparency and control over the AWS infrastructure.

AWS Systems Manager gives you visibility and control of your infrastructure on AWS. Systems Manager provides a unified user interface so you can view operational data from multiple AWS services and allows you to automate operational tasks across your AWS resources. With Systems Manager, you can group resources, like Amazon EC2 instances, Amazon S3 buckets, or Amazon RDS instances, by application, view operational data for monitoring and troubleshooting, and take action on your groups of resources. Systems Manager simplifies resource and application management, shortens the time to detect and resolve operational problems, and makes it easy to operate and manage your infrastructure securely at scale

The [AWS Trusted Advisor](#) is a helpful online instrument for real-time guidance on the provisioning of resources.

AWS Trusted Advisor is an online tool that provides you real time guidance to help you provision your resources following AWS best practices. Trusted Advisor checks help optimize your AWS infrastructure, increase security and performance, reduce your overall costs, and monitor service limits. Whether establishing new workflows, developing applications, or as part of ongoing improvement, take advantage of the recommendations provided by Trusted Advisor on a regular basis to help keep your solutions provisioned optimally. AWS Basic Support and AWS Developer Support customers get access to 6 security checks (**S3 Bucket Permissions, Security Groups - Specific Ports Unrestricted, IAM Use, MFA on Root Account, EBS Public Snapshots, RDS Public Snapshots**) and 50 service limit checks. **AWS Business Support and AWS Enterprise Support customers get access to all 115 Trusted Advisor checks (14 cost optimization, 17 security, 24 fault tolerance, 10 performance, and 50 service limits)** and recommendations.

The personal health dashboard helps in viewing alerts and guidance on resolving issues in case of disruptive events.

AWS Personal Health Dashboard provides alerts and remediation guidance when AWS is experiencing events that may impact you. While the Service Health Dashboard displays the general status of AWS services, Personal Health Dashboard gives you a personalized view into the performance and availability of the AWS services underlying your AWS resources.

The dashboard displays relevant and timely information to help you manage events in progress and provides proactive notification to help you plan for scheduled activities. With Personal Health Dashboard, alerts are triggered by changes in the health of AWS resources, giving you event visibility, and guidance to help quickly diagnose and resolve issues.

The Control Tower is suitable for automating set-up of the landing zone and configuration of AWS management and security services.

If you are an organization with multiple AWS accounts and teams, cloud setup and governance can be complex and time consuming, slowing down the very innovation you're trying to speed up. AWS Control Tower provides the easiest way to set up and govern a new, secure, multi-account AWS environment based on best practices established through AWS' experience working with thousands of enterprises as they move to the cloud. With AWS Control Tower, builders can provision new AWS accounts in a few clicks, while you have peace of mind knowing your accounts conform to your

company-wide policies. If you are building a new AWS environment, starting out on your journey to AWS, starting a new cloud initiative, or are completely new to AWS, Control Tower will help you get started quickly with governance and best practices built in.

The AWS License Manager improves the ease of managing licenses in on-premises and AWS servers.

AWS License Manager makes it easier to manage your software licenses from software vendors such as Microsoft, SAP, Oracle, and IBM across AWS and on-premises environments. AWS License Manager lets administrators create customized licensing rules that emulate the terms of their licensing agreements, and then enforces these rules when an instance of EC2 gets launched. Administrators can use these rules to help prevent licensing violations, such as using more licenses than an agreement stipulates. The rules in AWS License Manager enable you to help prevent a licensing breach by stopping the instance from launching or by notifying administrators about the infringement. Administrators gain control and visibility of all their licenses with the AWS License Manager dashboard and reduce the risk of non-compliance, misreporting, and additional costs due to licensing overages.

AWS License Manager also simplifies the management of your software licenses that require Amazon EC2 Dedicated Hosts. In License Manager, administrators can specify their Dedicated Host management preferences for host allocation and host capacity utilization. Once setup, AWS takes care of these administrative tasks on your behalf, so that you can seamlessly launch instances just like you would launch an EC2 instance with AWS-provided licenses.

AWS License manager is offered at no additional charge. You only pay for AWS resources you use to run your applications. Visit the AWS License Manager Console to start managing your licenses.

The AWS well-architected tool is used for reviewing the state of workloads and comparing them with the latest best practices in AWS architecture.

The AWS Well-Architected Tool helps you review the state of your workloads and compares them to the latest AWS architectural best practices. The tool is based on the AWS Well-Architected Framework, developed to help cloud architects build secure, high-performing, resilient, and efficient application infrastructure. This Framework provides a consistent approach for customers and partners to evaluate architectures, has been used in tens of thousands of workload reviews conducted by the AWS solutions architecture team, and provides guidance to help implement designs that scale with application needs over time.

To use this free tool, available in the AWS Management Console, just define your workload and answer a set of questions regarding operational excellence, security, reliability, performance efficiency, and cost optimization. The AWS Well-Architected Tool then provides a plan on how to architect for the cloud using established best practices.

The new Console Mobile Application on AWS cheat sheet 2019 is helpful for users to view and manage a specific set of resources. This product can help in supporting incident response without any disruption.

The AWS Console Mobile Application, provided by Amazon Web Services, lets you view and manage a select set of resources to support incident response while on-the-go.

The Console Mobile Application allows you to monitor resources through a dedicated dashboard and view configuration details, metrics, and alarms for select AWS services. The Dashboard provides permitted users with an overview of the account status, with real-time data on Amazon CloudWatch, Personal Health Dashboard, and AWS Billing and Cost Management. You can view ongoing issues and follow through to the relevant CloudWatch alarm screen for a detailed view with graphs and configuration options. In addition, you can check on the status of specific AWS services, view detailed resource screens, and perform select actions.

The Console Mobile Application requires an existing AWS account. Upon sign-in with a Root User, IAM User, Access Keys, or Federated Role the Console Mobile Application will store your credentials to easily switch between identities.

We regularly release updates with new features. Tell us what features you need and how you would use them with the Feedback feature of the Console Mobile Application. We're listening.

The Management Console is a helpful avenue for cloud management of all aspects, such as security credentials or cost management.

The AWS Management Console brings the unmatched breadth and depth of AWS right to your computer or mobile phone with a secure, easy-to-access, web-based portal. Discover new services, manage your entire account, build new applications, and learn how to do even more with AWS.

AWS Managed Services is a unique addition in the AWS services cheat sheet. This service provides AWS operations on your behalf by a Managed Service Provider.

As enterprise customers move towards adopting the cloud at scale, some find their people need help and time to gain AWS skills and experience. AWS Managed Services (AMS) operates AWS on your behalf, providing a secure and compliant AWS Landing Zone, a proven enterprise operating model, on-going cost optimization, and day-to-day infrastructure management. By implementing best practices to maintain your infrastructure, AWS Managed Services helps to reduce your operational overhead and risk. AWS Managed Services automates common activities, such as change requests, monitoring, patch management, security, and backup services, and provides full-lifecycle services to provision, run, and support your infrastructure. AWS Managed Services unburdens you from infrastructure operations so you can direct resources toward differentiating your business.

AWS Organizations is a new tool for central governance of the environment alongside the growth and scaling of workloads on AWS.

AWS Organizations helps you centrally govern your environment as you grow and scale your workloads on AWS. Whether you are a growing startup or a large enterprise, Organizations helps you to centrally manage billing; control access, compliance, and security; and share resources across your AWS accounts.

Using AWS Organizations, you can automate account creation, create groups of accounts to reflect your business needs, and apply policies for these groups for governance. You can also simplify billing by setting up a single payment method for all of your AWS accounts. Through integrations with other AWS services, you can use Organizations to define central configurations and resource sharing across accounts in your organization. AWS Organizations is available to all AWS customers at no additional charge.

The AWS Command Line Interface is also an important product in the management tools category of AWS services. However, we shall throw light on AWS CLI in the developer tools section of this AWS cheat sheet.

The AWS Command Line Interface (CLI) is a unified tool to manage your AWS services. With just one tool to download and configure, you can control multiple AWS services from the command line and automate them through scripts.

The AWS CLI introduces a new set of simple file commands for efficient file transfers to and from Amazon S3.

Application Services

Let's move to the application services and check out various products under it.

This entry in AWS glossary is recent, and it is a serverless event bus. [EventBridge](#) helps in connection of applications by using data from AWS services, own apps, and SaaS apps.

[This product](#) helps in the coordination of multiple AWS servers to form serverless workflows.

AWS Step Functions is a serverless function orchestrator that makes it easy to sequence AWS Lambda functions and multiple AWS services into business-critical applications. Through its visual interface, you can create and run a series of checkpointed and event-driven workflows that maintain the application state. The output of one step acts as input into the next. Each step in your application executes in order and as expected based on your defined business logic.

Orchestrating a series of individual serverless applications, managing retries, and debugging failures can be challenging. As your distributed applications become more complex, the complexity of managing them also grows. Step Functions automatically manages error handling, retry logic, and state. With its built-in operational controls, Step Functions manages sequencing, removing a significant operational burden from your team.

A simple message queuing service for decoupling and scaling microservices, serverless applications, and distributed systems.

Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. SQS eliminates the complexity and overhead associated with managing and operating message oriented middleware, and empowers developers to focus on differentiating work. Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Get started with SQS in minutes using the AWS console, Command Line Interface or SDK of your choice, and three simple commands.

SQS offers two types of message queues. Standard queues offer maximum throughput, best-effort ordering, and at-least-once delivery. SQS FIFO queues are designed to guarantee that messages are processed exactly once, in the exact order that they are sent.

AWS SNS gives a messaging service for decoupling microservices, serverless applications, and distributed systems.

Amazon Simple Notification Service (SNS) is an available, durable, secure, fully managed pub/sub messaging service that enables you to decouple microservices, distributed systems, and serverless applications. Amazon SNS provides topics for high-throughput, push-based, many-to-many messaging. Using Amazon SNS topics, your publisher systems can fan out messages to a large number of subscriber endpoints for parallel processing, including Amazon SQS queues, AWS Lambda functions, and HTTP/S webhooks. Additionally, SNS can be used to fan out notifications to end users using mobile push, SMS, and email.

You can get started with Amazon SNS in minutes by using the AWS Management Console, AWS Command Line Interface (CLI), or AWS Software Development Kit (SDK).

Amazon MQ is a managed message broker service. MQ is built with Apache ActiveMQ in mind and helps in easy setup and operations of message brokers in the cloud.

Amazon MQ is a managed message broker service for Apache ActiveMQ that makes it easy to set up and operate message brokers in the cloud. Message brokers allow different software systems—often using different programming languages, and on different platforms—to communicate and exchange information. Amazon MQ reduces your operational load by managing the provisioning, setup, and maintenance of ActiveMQ, a popular open-source message broker. Connecting your current applications to Amazon MQ is easy because it uses industry-standard APIs and protocols for messaging, including JMS, NMS, AMQP, STOMP, MQTT, and WebSocket. Using standards means that in most cases, there's no need to rewrite any messaging code when you migrate to AWS.

AppSync is a recent addition among AWS terms. It is an AWS product for simplifying application development through the creation of a flexible API.

AWS AppSync simplifies application development by letting you create a flexible API to securely access, manipulate, and combine data from one or more data sources. AppSync is a managed service that uses GraphQL to make it easy for applications to get exactly the data they need.

With AppSync, you can build scalable applications, including those requiring real-time updates, on a range of data sources such as NoSQL data stores, relational databases, HTTP APIs, and your custom data sources with AWS Lambda. For mobile and web apps, AppSync additionally provides local data access when devices go offline, and data synchronization with customizable conflict resolution, when they are back online.

AWS AppSync is generally available. If you would like to try building data driven mobile and web applications, watch the re-Invent session video to learn more and open the AWS AppSync console to get started. For pricing details, please see the pricing page. AWS AppSync is available in multiple regions. For details on region availability, please see the regions detail page.

The Cloud Development Kit is an open-source development framework. It helps in modeling and provisioning cloud application resources effectively

The AWS Cloud Development Kit (AWS CDK) is an open-source software development framework to model and provision your cloud application resources using familiar programming languages.

Provisioning cloud applications can be a challenging process that requires you to perform manual actions, write custom scripts, maintain templates, or learn domain-specific languages. AWS CDK uses the familiarity and expressive power of programming languages for modeling your applications. It provides you with high-level components that preconfigure cloud resources with proven defaults, so you can build cloud applications without needing to be an expert. AWS CDK provisions your resources in a safe, repeatable manner through AWS CloudFormation. It also enables you to compose and share your own custom components that incorporate your organization's requirements, helping you start new projects faster.

AWS CodeStar helps in quick development and deployment of applications on AWS.

AWS CodeStar enables you to quickly develop, build, and deploy applications on AWS. AWS CodeStar provides a unified user interface, enabling you to easily manage your software development activities in one place. With AWS CodeStar, you can set up your entire continuous delivery toolchain in minutes, allowing you to start releasing code faster. AWS CodeStar makes it easy for your whole team to work together securely, allowing you to easily manage access and add owners, contributors, and viewers to your projects. Each AWS CodeStar project comes with a project management dashboard, including an integrated issue tracking capability powered by Atlassian JIRA Software. With the AWS CodeStar project dashboard, you can easily track progress across your entire software development process, from your backlog of work items to teams' recent code deployments. Visit [here](#) to learn more.

There is no additional charge for using AWS CodeStar. You only pay for the AWS resources that you provision for developing and running your application (for example, Amazon EC2 instances).

CodeCommit is a fully managed source control service that helps in easier team collaboration on code.

AWS CodeCommit is a fully managed source control service that hosts secure Git-based repositories. It makes it easy for teams to collaborate on code in a secure and highly scalable ecosystem. CodeCommit eliminates the need to operate your own source control system or worry about scaling its infrastructure. You can use CodeCommit to securely store anything from source code to binaries, and it works seamlessly with your existing Git tools.

CodeBuild is a completely managed continuous integration service for the compilation of source code, running tests and producing software packages.

AWS CodeBuild is a fully managed continuous integration service that compiles source code, runs tests, and produces software packages that are ready to deploy. With CodeBuild, you do not need to provision, manage, and scale your own build servers. CodeBuild scales continuously and processes multiple builds concurrently, so your builds are not left waiting in a queue. You can get started quickly by using prepackaged build environments, or you can create custom build environments that use your own build tools. With CodeBuild, you are charged by the minute for the compute resources you use.

CodeDeploy is a fully managed deployment service for automation of software deployments.

AWS CodeDeploy is a fully managed deployment service that automates software deployments to a variety of compute services such as Amazon EC2, AWS Fargate, AWS Lambda, and your on-premises servers. AWS CodeDeploy makes it easier for you to rapidly release new features, helps you avoid downtime during application deployment, and handles the complexity of updating your applications. You can use AWS CodeDeploy to automate software deployments, eliminating the need for error-prone manual operations. The service scales to match your deployment needs.

CodePipeline is one of the prominent names in AWS glossary since 2015. It is a fully managed continuous delivery service for automation of release pipelines.

AWS CodePipeline is a fully managed continuous delivery service that helps you automate your release pipelines for fast and reliable application and infrastructure updates. CodePipeline automates the build, test, and deploy phases of your release process every time there is a code change, based on the release model you define. This enables you to rapidly and reliably deliver features and updates. You can easily integrate AWS CodePipeline with third-party services such as GitHub or with your own custom plugin. With AWS CodePipeline, you only pay for what you use. There are no upfront fees or long-term commitments.

Cloud9 is a cloud-based integrated development environment (IDE) for writing, running, and debugging code.

AWS Cloud9 is a cloud-based integrated development environment (IDE) that lets you write, run, and debug your code with just a browser. It includes a code editor, debugger, and terminal. Cloud9 comes prepackaged with essential tools for popular programming languages, including JavaScript, Python, PHP, and more, so you do not need to install files or configure your development machine to start new projects. Since your Cloud9 IDE is cloud-based, you can work on your projects from your office, home, or anywhere using an internet-connected machine. Cloud9 also provides a seamless experience for developing serverless applications enabling you to easily define resources, debug, and switch between local and remote execution of serverless applications. With Cloud9, you can quickly share your development environment with your team, enabling you to pair program and track each other's inputs in real time.

X-Ray product of AWS helps in the analysis and debugging of the production stage, distributed applications.

AWS X-Ray helps developers analyze and debug production, distributed applications, such as those built using a microservices architecture. With X-Ray, you can understand how your application and its underlying services are performing to identify and troubleshoot the root cause of performance issues and errors. X-Ray provides an end-to-end view of requests as they travel through your application, and shows a map of your application's underlying components. You can use X-Ray to analyze both applications in development and in production, from simple three-tier applications to complex microservices applications consisting of thousands of services.

The Command Line Interface (CLI) tool provides an integrated solution for the management of AWS services.

The AWS Command Line Interface (CLI) is a unified tool to manage your AWS services. With just one tool to download and configure, you can control multiple AWS services from the command line and automate them through scripts.

The AWS CLI introduces a new set of simple file commands for efficient file transfers to and from Amazon S3.

Corretto is one of the latest additions in the AWS Cheat sheet. It is a free, multi-platform distribution of Open Java Development Kit ready for production.

Amazon Corretto is a no-cost, multiplatform, production-ready distribution of the Open Java Development Kit (OpenJDK). Corretto comes with long-term support that will include performance enhancements and security fixes. Amazon runs Corretto internally on thousands of production services and Corretto is certified as compatible with the Java SE standard. With Corretto, you can develop and run Java applications on popular operating systems, including Linux, Windows, and macOS.

Tools and SDKs on AWS help in accessing and managing AWS services with desired development platform or language.

AWS Amplify is a recent addition in AWS glossary after 2017. It helps in the creation, configuration, and implementation of scalable mobile and web apps based on AWS.

AWS Amplify is a set of tools and services that enables mobile and front-end web developers to build secure, scalable full stack applications, powered by AWS. With Amplify, it's easy to create custom onboarding flows, develop voice-enabled experiences, build AI-powered real-time feeds, launch targeted campaigns, and more. No matter the use case, AWS Amplify helps you develop and release great apps your customers will love. AWS Amplify includes an open-source framework with use-case centric libraries and a powerful toolchain to create and add cloud-based features to your app, and a web hosting service to deploy static web applications.

This product helps developers for easy creation, publishing, maintenance, monitoring, and security of APIs at different scales.

Amazon API Gateway is a fully managed service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale. APIs act as the "front door" for applications to access data, business logic, or functionality from your backend services. Using API Gateway, you can create RESTful APIs and WebSocket APIs that enable real-time two-way communication applications. API Gateway supports containerized and serverless workloads, as well as web applications.

API Gateway handles all the tasks involved in accepting and processing up to hundreds of thousands of concurrent API calls, including traffic management, CORS support, authorization and access control, throttling, monitoring, and API version management. API Gateway has no minimum fees or startup costs. You pay for the API calls you receive, and the amount of data transferred out and, with the API Gateway tiered pricing model, you can reduce your cost as your API usage scales.

AWS Device Farm is an app testing service for testing and interacting with Android, iOS, or web apps on many devices simultaneously.

AWS Device Farm is an application testing service that lets you improve the quality of your web and mobile apps by testing them across an extensive range of desktop browsers and real mobile devices; without having to provision and manage any testing infrastructure. The service enables you to run your tests concurrently on multiple desktop browsers or real devices to speed up the execution of your test suite, and generates videos and logs to help you quickly identify issues with your app.

The other two products in this category are Amazon Pinpoint and AWS AppSync. We have discussed AWS AppSync in the Application services section. Amazon Pinpoint is relevant to the customer engagement services section. AR & VR

Sumerian is the latest addition in the AWS cheat sheet. It helps in creating and running virtual reality (VR), 3D, and augmented reality (AR) applications easily and quickly.

Bring a new dimension to your web and mobile applications with Amazon Sumerian. 3D immersive experiences are breathing new life into user experiences on the web, increasing customer engagement with brands and improving productivity in the workplace. Amazon Sumerian makes it easy to create engaging 3D front-end experiences and is integrated with AWS services to provide easy access to machine learning, chatbots, code execution and more. As a web-based platform, your immersive experiences are accessible via a simple browser URL and can run on popular hardware for AR/VR.

AWS Cost Explorer is extremely helpful in visualization, understanding, and management of AWS costs and usage over time.

AWS Cost Explorer has an easy-to-use interface that lets you visualize, understand, and manage your AWS costs and usage over time.

Get started quickly by creating custom reports that analyze cost and usage data. Analyze your data at a high level (for example, total costs and usage across all accounts) or dive deeper into your cost and usage data to identify trends, pinpoint cost drivers, and detect anomalies.

AWS Budgets allows users to set custom budgets for alerts when overspending is evident.

AWS Budgets gives you the ability to set custom budgets that alert you when your costs or usage exceed (or are forecasted to exceed) your budgeted amount.

You can also use AWS Budgets to set reservation utilization or coverage targets and receive alerts when your utilization drops below the threshold you define. Reservation alerts are supported for Amazon EC2, Amazon RDS, Amazon Redshift, Amazon ElastiCache, and Amazon Elasticsearch reservations.

The reports can help in identifying custom RI utilization and coverage targets and visualization of progress towards objectives.

The Reserved Instance Utilization and Coverage reports are available out-of-the-box in AWS Cost Explorer. Using these reports, you can set custom RI utilization and coverage targets, visualize how well you are tracking towards your goals, and access information associated with your savings as compared to On-Demand prices. From there, you can refine the underlying data using the available

filtering dimensions (e.g., account, instance type, scope, and others) to gain greater insight into your reservations.

The Cost and Usage report on AWS is a helpful tool in the AWS cheat sheet 2019. It can provide a clear impression of AWS usage in the individual service category and for IAM users in terms of hourly or daily line items.

The AWS Cost and Usage Reports (AWS CUR) contains the most comprehensive set of cost and usage data available. You can use Cost and Usage Reports to publish your AWS billing reports to an Amazon Simple Storage Service (Amazon S3) bucket that you own. You can receive reports that break down your costs by the hour or day, by product or product resource, or by tags that you define yourself. AWS updates the report in your bucket once a day in comma-separated value (CSV) format. You can view the reports using spreadsheet software such as Microsoft Excel or Apache OpenOffice Calc, or access them from an application using the Amazon S3 API.

AWS Cost and Usage Reports tracks your AWS usage and provides estimated charges associated with your account. Each report contains line items for each unique combination of AWS products, usage type, and operation that you use in your AWS account. You can customize the AWS Cost and Usage Reports to aggregate the information either by the hour or by the day. AWS Cost and Usage Reports can do the following:

Deliver report files to your Amazon S3 bucket
Update the report up to three times a day
Create, retrieve, and delete your reports using the AWS CUR API Reference

This AWS product is still in preview. It can help in easier setup, deployment, and management of scalable blockchain networks.

Amazon Managed Blockchain is a fully managed service that makes it easy to create and manage scalable blockchain networks using the popular open-source frameworks Hyperledger Fabric and Ethereum*.

Blockchain makes it possible to build applications where multiple parties can execute transactions without the need for a trusted, central authority. Today, building a scalable blockchain network with existing technologies is complex to set up and hard to manage. To create a blockchain network, each network member needs to manually provision hardware, install software, create and manage certificates for access control, and configure networking components. Once the blockchain network is running, you need to continuously monitor the infrastructure and adapt to changes, such as an increase in transaction requests, or new members joining or leaving the network.

The QLDB is also in preview and can come into AWS services cheat sheet very soon. It serves as a ledger database for providing a transparent, verifiable, and immutable transaction log under the ownership of a central trusted authority.

Amazon QLDB is a fully managed ledger database that provides a transparent, immutable, and cryptographically verifiable transaction log owned by a central trusted authority. Amazon QLDB can be used to track each and every application data change and maintains a complete and verifiable history of changes over time.

Ledgers are typically used to record a history of economic and financial activity in an organization. Many organizations build applications with ledger-like functionality because they want to maintain an accurate history of their applications' data, for example, tracking the history of credits and debits in banking transactions, verifying the data lineage of an insurance claim, or tracing movement of an item in a supply chain network. Ledger applications are often implemented using custom audit tables or audit trails created in relational databases. However, building audit functionality with relational databases is time-consuming and prone to human error. It requires custom development, and since relational databases are not inherently immutable, any unintended changes to the data are hard to track and verify. Alternatively, blockchain frameworks, such as Hyperledger Fabric and Ethereum, can also be used as a ledger. However, this adds complexity as you need to set-up an entire blockchain network with multiple nodes, manage its infrastructure, and require the nodes to validate each transaction before it can be added to the ledger.

Organizations and employees could use Alexa for achieving better productivity with this product.

Alexa for Business is a service that enables organizations and employees to use Alexa to get more work done. With Alexa for Business, employees can use Alexa as their intelligent assistant to be more productive in meeting rooms, at their desks, and even with the Alexa devices they already use at home or on the go. IT and facilities managers can also use Alexa for Business to measure and increase the utilization of the existing meeting rooms in their workplace

Amazon Chime is a communications service. It helps in the meeting, chatting, and addressing calls using only a single application.

Amazon Chime is a communications service that lets you meet, chat, and place business calls inside and outside your organization, all using a single application. ... Amazon Chime Voice Connector is a service that enables enterprises to migrate their telephony workloads to AWS

Amazon WorkMail is a high-security managed business email and calendar service providing support for existing desktop and mobile email client applications.

Amazon WorkMail is a secure, managed business email and calendar service with support for existing desktop and mobile email client applications. Amazon WorkMail gives users the ability to seamlessly access their email, contacts, and calendars using the client application of their choice, including Microsoft Outlook, native iOS and Android email applications, any client application supporting the IMAP protocol, or directly through a web browser. You can integrate Amazon WorkMail with your existing corporate directory, use email journaling to meet compliance requirements, and control both the keys that encrypt your data and the location in which your data is stored. You can also set up interoperability with Microsoft Exchange Server, and programmatically manage users, groups, and resources using the Amazon WorkMail SDK.

Amazon Connect

The self-service contact center service based on the AWS cloud helps in simpler delivery of customer service.

Amazon Connect is an easy-to-use omnichannel cloud contact center that helps companies provide superior customer service at a lower cost. Over 10 years ago, Amazon's retail business needed a contact center that would give our customers personal, dynamic, and natural experiences. We could not find one that met our needs, so we built it. We've now made this available for all businesses, and today thousands of companies ranging from 10 to tens of thousands of agents use Amazon Connect to serve millions of customers daily.

Designed from the ground up to be omnichannel, Amazon Connect provides a seamless experience across voice and chat for your customers and agents. This includes one set of tools for skills-based routing, powerful real-time and historical analytics, and easy-to-use intuitive management tools – all with pay-as-you-go pricing, which means Amazon Connect simplifies contact center operations, improves agent efficiency, and lowers costs. You can set up a contact center in minutes that can scale to support millions of customers.

A helpful new addition among AWS terms, Pinpoint helps in sending targeted messages to the audience through various channels.

Amazon Pinpoint is a flexible and scalable outbound and inbound marketing communications service. You can connect with customers over channels like email, SMS, push, or voice. Amazon Pinpoint is easy to set up, easy to use, and is flexible for all marketing communication scenarios. Segment your campaign audience for the right customer and personalize your messages with the right content. Delivery and campaign metrics in Amazon Pinpoint measure the success of your communications. Amazon Pinpoint can grow with you and scales globally to billions of messages per day across channels

SES is a prolific email sending service meant for sending marketing, transactional, or notification emails.

Amazon Simple Email Service (SES) is a cost-effective, flexible, and scalable email service that enables developers to send mail from within any application. You can configure Amazon SES quickly to support several email uses cases, including transactional, marketing, or mass email communications. Amazon SES's flexible IP deployment and email authentication options help drive higher deliverability and protect sender reputation, while sending analytics measure the impact of each email. With Amazon SES, you can send email securely, globally, and at scale.

End-User Computing

WorkSpaces are helpful tools for provisioning Windows or Linux IS in few minutes. It helps in quick scalability for providing multiple OS platforms to workers throughout the world.

Amazon WorkSpaces is a managed, secure Desktop-as-a-Service (DaaS) solution. You can use Amazon WorkSpaces to provision either Windows or Linux desktops in just a few minutes and quickly scale to provide thousands of desktops to workers across the globe. You can pay either monthly or hourly, just for the WorkSpaces you launch, which helps you save money when compared to traditional desktops and on-premises VDI solutions. Amazon WorkSpaces helps you eliminate the complexity in managing hardware inventory, OS versions and patches, and Virtual

Desktop Infrastructure (VDI), which helps simplify your desktop delivery strategy. With Amazon WorkSpaces, your users get a fast, responsive desktop of their choice that they can access anywhere, anytime, from any supported device.

This is a completely managed application streaming service in this AWS cheat sheet.

Amazon AppStream 2.0 is a fully managed application streaming service. You centrally manage your desktop applications on AppStream 2.0 and securely deliver them to any computer. You can easily scale to any number of users across the globe without acquiring, provisioning, and operating hardware or infrastructure. AppStream 2.0 is built on AWS, so you benefit from a data center and network architecture designed for the most security-sensitive organizations. Each user has a fluid and responsive experience with your applications, including GPU-intensive 3D design and engineering ones, because your applications run on virtual machines (VMs) optimized for specific use cases and each streaming session automatically adjusts to network conditions.

Enterprises can use AppStream 2.0 to simplify application delivery and complete their migration to the cloud. Educational institutions can provide every student access to the applications they need for class on any computer. Software vendors can use AppStream 2.0 to deliver trials, demos, and training for their applications with no downloads or installations. They can also develop a full software-as-a-service (SaaS) solution without rewriting their application.

Amazon Work-Docs

Work-Docs is reliable content creation, storage, and collaboration service on AWS.

Amazon Work-Docs is a fully managed, secure content creation, storage, and collaboration service. With Amazon Work-Docs, you can easily create, edit, and share content, and because it's stored centrally on AWS, access it from anywhere on any device. Amazon Work-Docs makes it easy to collaborate with others, and lets you easily share content, provide rich feedback, and collaboratively edit documents. You can use Amazon Work-Docs to retire legacy file share infrastructure by moving file shares to the cloud. Amazon Work-Docs lets you integrate with your existing systems and offers a rich API so that you can develop your own content-rich applications. Amazon Work-Docs is built on AWS, where your content is secured on the world's largest cloud infrastructure.

With Amazon Work-Docs, there are no upfront fees or commitments. You pay only for active user accounts, and the storage you use.

WorkLink is a prominent addition in this AWS cheat sheet that provides easy and secure access to the internal website, web apps, and web content.

Amazon WorkLink is a fully managed service that lets you provide your employees with secure, easy access to your internal corporate websites and web apps using their mobile phones. Traditional solutions such as Virtual Private Networks (VPNs) and device management software are inconvenient to use on the go, and often require the use of custom browsers that have a poor user experience. As a result, employees often forgo using them altogether.

With Amazon WorkLink, employees can access internal web content as easily as they access any public website, without the hassle of connecting to their corporate network. When a user accesses

an internal website, the page is first rendered in a browser running in a secure container in AWS. Amazon WorkLink then sends the contents of that page to employee phones as vector graphics while preserving the functionality and interactivity of the page. This approach is more secure than traditional solutions because internal content is never stored or cached by the browser on employee phones, and employee devices never connect directly to your corporate network.

GameLift is the managed service for deployment, operations, and scaling of dedicated game servers ideal for session-based multiplayer games.

Amazon GameLift is a managed service for deploying, operating, and scaling dedicated game servers for session-based multiplayer games. ... You pay only for the capacity you use, so you can get started whether you're working on a new game idea or running a game with millions of players

Lumberyard is the free cross-platform AAA game engine with prominent integration with Twitch and AWS.

Amazon Lumberyard is a free cross-platform game engine developed by Amazon and based on CryEngine, which was licensed from Crytek in 2015. The engine features integration with Amazon Web Services to allow developers to build or host their games on Amazon's servers, as well as support for livestreaming via Twitch.

IoT Core is one of the notable additions in the AWS cheat sheet. It is a managed cloud service for secure and easy interaction of connected devices with cloud applications and devices.

AWS IoT Core is a managed cloud service that lets connected devices easily and securely interact with cloud applications and other devices. AWS IoT Core can support billions of devices and trillions of messages, and can process and route those messages to AWS endpoints and to other devices reliably and securely. With AWS IoT Core, your applications can keep track of and communicate with all your devices, all the time, even when they aren't connected.

AWS IoT Core also makes it easy to use AWS and Amazon services like AWS Lambda, Amazon Kinesis, Amazon S3, Amazon SageMaker, Amazon DynamoDB, Amazon CloudWatch, AWS CloudTrail, Amazon QuickSight, and Alexa Voice Service to build IoT applications that gather, process, analyze and act on data generated by connected devices, without having to manage any infrastructure.

FreeRTOS is an OS for microcontrollers for easier programming, deployment, security, connection, and management of small, low-power edge devices.

FreeRTOS is an open source, real-time operating system for microcontrollers that makes small, low-power edge devices easy to program, deploy, secure, connect, and manage. Distributed freely under the MIT open-source license, FreeRTOS includes a kernel and a growing set of software libraries suitable for use across industry sectors and applications. This includes securely connecting your small, low-power devices to AWS cloud services like AWS IoT Core or to more powerful edge devices running AWS IoT Greengrass. FreeRTOS is built with an emphasis on reliability and ease of use.

A microcontroller contains a simple, resource-constrained processor that can be found in many devices, including appliances, sensors, fitness trackers, industrial automation, and automobiles. Many of these small devices can benefit from connecting to the cloud or locally to other devices but have limited compute power and memory capacity and typically perform simple, functional tasks.

Microcontrollers frequently run operating systems that may not have built-in functionality to connect to local networks or the cloud, making IoT applications a challenge. FreeRTOS helps solve this problem by providing the kernel to run low-power devices as well as software libraries that make it easy to securely connect to the cloud or other edge devices, so you can collect data from them for IoT applications and take action.

Greengrass provides an extension of AWS to edge devices for acting locally on data generated.

AWS IoT Greengrass seamlessly extends AWS to edge devices so they can act locally on the data they generate, while still using the cloud for management, analytics, and durable storage. With AWS IoT Greengrass, connected devices can run AWS Lambda functions, Docker containers, or both, execute predictions based on machine learning models, keep device data in sync, and communicate with other devices securely – even when not connected to the Internet.

With AWS IoT Greengrass, you can use familiar languages and programming models to create and test your device software in the cloud, and then deploy it to your devices. AWS IoT Greengrass can be programmed to filter device data, manage the life cycle of that data on the device, and only transmit necessary information back to AWS. You can also connect to third-party applications, on-premises software, and AWS services out-of-the-box with AWS IoT Greengrass Connectors. Connectors also jumpstart device onboarding with pre-built protocol adapter integrations and allow you to streamline authentication via integration with AWS Secrets Manager.

IoT 1-Click is a credible AWS cheat sheet entry that helps simple devices in triggering AWS Lambda functions for executing a specific action.

AWS IoT 1-Click is a service that enables simple devices to trigger AWS Lambda functions that can execute an action. AWS IoT 1-Click supported devices enable you to easily perform actions such as notifying technical support, tracking assets, and replenishing goods or services. AWS IoT 1-Click supported devices are ready for use right out of the box and eliminate the need for writing your own firmware or configuring them for secure connectivity. AWS IoT 1-Click supported devices can be easily managed. You can easily create device groups and associate them with a Lambda function that executes your desired action when triggered. You can also track device health and activity with the pre-built reports.

Customers can easily get started using AWS IoT 1-Click with supported devices. Device manufacturers can easily onboard devices on to AWS IoT 1-Click by contacting us.

AWS IoT Analytics is an ideal tool for running and operating comprehensive analytics for massive volumes of IoT data.

AWS IoT Analytics is a fully managed service that makes it easy to run and operationalize sophisticated analytics on massive volumes of IoT data without having to worry about the cost and complexity typically required to build an IoT analytics platform. It is the easiest way to run analytics on IoT data and get insights to make better and more accurate decisions for IoT applications and machine learning use cases.

IoT data is highly unstructured which makes it difficult to analyze with traditional analytics and business intelligence tools that are designed to process structured data. IoT data comes from devices that often record fairly noisy processes (such as temperature, motion, or sound). The data from these devices can frequently have significant gaps, corrupted messages, and false readings that must be cleaned up before analysis can occur. Also, IoT data is often only meaningful in the context of additional, third party data inputs. For example, to help farmers determine when to water their crops, vineyard irrigation systems often enrich moisture sensor data with rainfall data from the vineyard, allowing for more efficient water usage while maximizing harvest yield.

AWS IoT Analytics automates each of the difficult steps that are required to analyze data from IoT devices. AWS IoT Analytics filters, transforms, and enriches IoT data before storing it in a time-series data store for analysis. You can setup the service to collect only the data you need from your devices, apply mathematical transforms to process the data, and enrich the data with device-specific metadata such as device type and location before storing the processed data. Then, you can analyze your data by running ad hoc or scheduled queries using the built-in SQL query engine or perform more complex analytics and machine learning inference. AWS IoT Analytics makes it easy to get started with machine learning by including pre-built models for common IoT use cases. You can also use your own custom analysis, packaged in a container, to execute on AWS IoT Analytics. AWS IoT Analytics automates the execution of your custom analyses created in Jupyter Notebook or your own tools (such as Matlab, Octave, etc.) to be executed on your schedule.

AWS IoT Analytics is a fully managed service that operationalizes analyses and scales automatically to support up to petabytes of IoT data. With AWS IoT Analytics, you can analyze data from millions of devices and build fast, responsive IoT applications without managing hardware or infrastructure.

This addition in AWS cheat sheet is a programmable button depending on Amazon Dash Button hardware

The AWS IoT Button is a programmable button based on the Amazon Dash Button hardware. This simple Wi-Fi device is easy to configure and designed for developers to get started with AWS IoT Core, AWS Lambda, Amazon DynamoDB, Amazon SNS, and many other Amazon Web Services without writing device-specific code.

You can code the button's logic in the cloud to configure button clicks to count or track items, call or alert someone, start or stop something, order services, or even provide feedback. For example, you can click the button to unlock or start a car, open your garage door, call a cab, call your spouse or a customer service representative, track the use of common household chores, medications, or products, or remotely control your home appliances.

The button can be used as a remote control for Netflix, a switch for your Philips Hue light bulb, a check-in/check-out device for Airbnb guests, or a way to order your favorite pizza for delivery. You can integrate it with third-party APIs like Twitter, Facebook, Twilio, Slack or even your own company's applications. Connect it to things we have not even thought of yet. We cannot wait to see what you will build with the AWS IoT Button!

If you would like to use simple devices that connect to AWS IoT Core out of the box

AWS IoT Device Defender is an ideal AWS product for fully managed services to secure the collection of IoT devices.

AWS IoT Device Defender is a fully managed service that helps you secure your fleet of IoT devices. AWS IoT Device Defender continuously audits your IoT configurations to make sure that they aren't deviating from security best practices. A configuration is a set of technical controls you set to help keep information secure when devices are communicating with each other and the cloud. AWS IoT Device Defender makes it easy to maintain and enforce IoT configurations, such as ensuring device identity, authenticating, and authorizing devices, and encrypting device data. AWS IoT Device Defender continuously audits the IoT configurations on your devices against a set of predefined security best practices. AWS IoT Device Defender sends an alert if there are any gaps in your IoT configuration that might create a security risk, such as identity certificates being shared across multiple devices or a device with a revoked identity certificate trying to connect to AWS IoT Core.

AWS IoT Device Defender also lets you continuously monitor security metrics from devices and AWS IoT Core for deviations from what you have defined as appropriate behavior for each device. If something does not look right, AWS IoT Device Defender sends out an alert so you can take action to remediate the issue. For example, traffic spikes in outbound traffic might indicate that a device is participating in a DDoS attack. AWS IoT Greengrass and FreeRTOS automatically integrate with AWS IoT Device Defender to provide security metrics from the devices for evaluation.

AWS IoT Device Defender can send alerts to the AWS IoT Console, Amazon CloudWatch, and Amazon SNS. If you determine that you need to take an action based on an alert, you can use AWS IoT Device Management to take mitigating actions such as pushing security fixes.

IoT Device Management in AWS cheat sheet is ideal for easy onboarding, organization, monitoring, and remote management of IoT devices at scale.

As many IoT deployments consist of hundreds of thousands to millions of devices, it is essential to track, monitor, and manage connected device fleets. You need to ensure your IoT devices work properly and securely after they have been deployed. You also need to secure access to your devices, monitor health, detect and remotely troubleshoot problems, and manage software and firmware updates.

AWS IoT Device Management makes it easy to securely register, organize, monitor, and remotely manage IoT devices at scale. With AWS IoT Device Management, you can register your connected devices individually or in bulk, and easily manage permissions so that devices remain secure. You can also organize your devices, monitor and troubleshoot device functionality, query the state of any IoT device in your fleet, and send firmware updates over-the-air (OTA). AWS IoT Device Management is agnostic to device type and OS, so you can manage devices from constrained microcontrollers to connected cars all with the same service. AWS IoT Device Management allows you to scale your fleets and reduce the cost and effort of managing large and diverse IoT device deployments.

IoT Events is a fully managed IoT service for easier detection and response to IoT sensor and application events.

AWS IoT Events is a fully managed service that makes it easy to detect and respond to events from IoT sensors and applications. Events are patterns of data identifying more complicated circumstances than expected, such as changes in equipment when a belt is stuck or motion detectors using movement signals to activate lights and security cameras. Before IoT Events, you had to build costly, custom applications to collect data, apply decision logic to detect an event, and then trigger another application to react to the event. Using IoT Events, it's simple to detect events across thousands of IoT sensors sending different telemetry data, such as temperature from a freezer, humidity from respiratory equipment, and belt speed on a motor. You simply select the relevant data sources to ingest, define the logic for each event using simple 'if-then-else' statements, and select the alert or custom action to trigger when an event occurs. IoT Events continuously monitors data from multiple IoT sensors and applications, and it integrates with other services, such as AWS IoT Core and AWS IoT Analytics, to enable early detection and unique insights into events. IoT Events automatically triggers alerts and actions in response to events based on the logic you define to resolve issues quickly, reduce maintenance costs, and increase operational efficiency.

IoT SiteWise is an ideal managed service for easier collection and organization of data from industrial equipment.

AWS IoT SiteWise is a managed service that makes it easy to collect, store, organize and monitor data from industrial equipment at scale to help you make better, data-driven decisions. You can use AWS IoT SiteWise to monitor operations across facilities, quickly compute common industrial performance metrics, and create applications that analyze industrial equipment data to prevent costly equipment issues and reduce gaps in production. This allows you to collect data consistently across devices, identify issues with remote monitoring more quickly, and improve multi-site processes with centralized data.

Today, getting performance metrics from industrial equipment is challenging because data is often locked into proprietary on-premises data stores and typically requires specialized expertise to retrieve and place in a format that is useful for analysis. AWS IoT SiteWise simplifies this process by providing software running on a gateway that resides in your facilities and automates the process of collecting and organizing industrial equipment data. This gateway securely connects to your on-premises data servers, collects data, and sends the data to the AWS Cloud. AWS IoT SiteWise also provides interfaces for collecting data from modern industrial applications through MQTT messages or APIs.

You can use AWS IoT SiteWise to model your physical assets, processes and facilities, quickly compute common industrial performance metrics, and create fully managed web applications to help analyze industrial equipment data, reduce costs and make faster decisions. With AWS IoT SiteWise, you can focus on understanding and optimizing your operations, rather than building costly in-house data collection and management applications.

This product is the latest addition in the AWS cheat sheet as a hardware validation and benefits program.

AWS IoT Things Graph is helpful for easier visualization of connectivity between different devices and web services for building IoT applications.

AWS IoT Things Graph is a service that makes it easy to visually connect different devices and web services to build IoT applications.

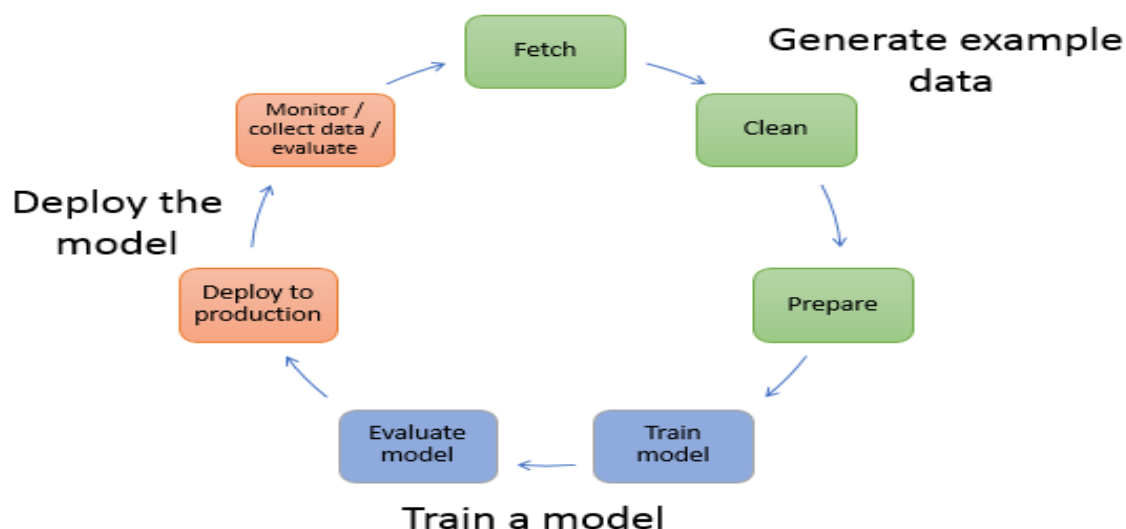
IoT applications are being built today using a variety of devices and web services to automate tasks for a wide range of use cases, such as smart homes, industrial automation, and energy management. Because there aren't any widely adopted standards, it's difficult today for developers to get devices from multiple manufacturers to connect to each other as well as with web services. This forces developers to write lots of code to wire together all of the devices and web services they need for their IoT application. AWS IoT Things Graph provides a visual drag-and-drop interface for connecting and coordinating interactions between devices and web services, so you can build IoT applications quickly. For example, in a commercial agriculture application, you can define interactions between humidity, temperature, and sprinkler sensors with weather data services in the cloud to automate watering. You represent devices and services using pre-built reusable components, called models, that hide low-level details, such as protocols and interfaces, and are easy to integrate to create sophisticated workflows.

You can get started with AWS IoT Things Graph using these pre-built models for popular device types, such as cameras, motion sensors, and switches, as well as web services such as Amazon Simple Storage Service (S3) or Amazon Rekognition or create your own custom models. You can deploy and run your IoT applications to the AWS Cloud or AWS IoT Greengrass-enabled devices such as edge gateways and cable set-top boxes, in just a few clicks. AWS IoT Greengrass is software that provides local compute and secure cloud connectivity so devices can respond quickly to local events even without internet connectivity, and runs on a huge range of devices from a Raspberry Pi to a server-level appliance.

The ML tool of AWS is the right entry in the AWS cheat sheet. [Amazon SageMaker](#) helps developers and data scientist to build, train, and deploy machine learning models faster.

In machine learning, you "teach" a computer to make predictions, or inferences. First, you use an algorithm and example data to train a model. Then you integrate your model into your application to generate inferences in real time and at scale. In a production environment, a model typically learns from millions of example data items and produces inferences in hundreds to less than 20 milliseconds.

The following diagram illustrates the typical workflow for creating a machine learning model:



This is a natural language processing (NLP) tool that helps in finding patterns and insights in text.

Amazon Comprehend is a natural language processing (NLP) service that uses machine learning to find insights and relationships in text. No machine learning experience required.

There is a treasure trove of potential sitting in your unstructured data. Customer emails, support tickets, product reviews, social media, even advertising copy represents insights into customer sentiment that can be put to work for your business. The question is how to get at it? As it turns out, Machine learning is particularly good at accurately identifying specific items of interest inside vast swathes of text (such as finding company names in analyst reports) and can learn the sentiment hidden inside language (identifying negative reviews, or positive customer interactions with customer service agents), at almost limitless scale.

Amazon Comprehend uses machine learning to help you uncover the insights and relationships in your unstructured data. The service identifies the language of the text; extracts key phrases, places, people, brands, or events; understands how positive or negative the text is; analyzes text using tokenization and parts of speech; and automatically organizes a collection of text files by topic. You can also use AutoML capabilities in Amazon Comprehend to build a custom set of entities or text classification models that are tailored uniquely to your organization's needs. For extracting complex medical information from unstructured text, you can use Amazon Comprehend Medical. The service can identify medical information, such as medical conditions, medications, dosages, strengths, and frequencies from a variety of sources like doctor's notes, clinical trial reports, and patient health records. Amazon Comprehend Medical also identifies the relationship among the extracted medication and test, treatment and procedure information for easier analysis. For example, the service identifies a particular dosage, strength, and frequency related to a specific medication from unstructured clinical notes.

Amazon Comprehend is fully managed, so there are no servers to provision, and no machine learning models to build, train, or deploy. You pay only for what you use, and there are no minimum fees and no upfront commitments.

Amazon Lex helps in creating conversational interfaces for any voice or text-based application.

Amazon Lex is a service for building conversational interfaces into any application using voice and text. Amazon Lex provides the advanced deep learning functionalities of automatic speech recognition (ASR) for converting speech to text, and natural language understanding (NLU) to recognize the intent of the text, to enable you to build applications with highly engaging user experiences and lifelike conversational interactions. With Amazon Lex, the same deep learning technologies that power Amazon Alexa are now available to any developer, enabling you to quickly and easily build sophisticated, natural language, conversational bots (“chatbots”). With Amazon Lex, you can build bots to increase contact center productivity, automate simple tasks, and drive operational efficiencies across the enterprise. As a fully managed service, Amazon Lex scales automatically, so you don’t need to worry about managing infrastructure.

Amazon Polly helps in the conversion of text into lifelike speech.

Amazon Polly is a service that turns text into lifelike speech, allowing you to create applications that talk, and build entirely new categories of speech-enabled products. Polly's Text-to-Speech (TTS) service uses advanced deep learning technologies to synthesize natural sounding human speech. With dozens of lifelike voices across a broad set of languages, you can build speech-enabled applications that work in many different countries.

In addition to Standard TTS voices, Amazon Polly offers Neural Text-to-Speech (NTTS) voices that deliver advanced improvements in speech quality through a new machine learning approach. Polly's Neural TTS technology also supports two speaking styles that allow you to better match the delivery style of the speaker to the application: a Newscaster reading style that is tailored to news narration use cases, and a Conversational speaking style that is ideal for two-way communication like telephony applications.

Finally, Amazon Polly Brand Voice can create a custom voice for your organization. This is a custom engagement where you will work with the Amazon Polly team to build an NTTS voice for the exclusive use of your organization. Learn more [here](#).

Amazon Rekognition helps in easier addition of video and image analysis to applications.

Amazon Rekognition makes it easy to add image and video analysis to your applications using proven, highly scalable, deep learning technology that requires no machine learning expertise to use. With Amazon Rekognition, you can identify objects, people, text, scenes, and activities in images and videos, as well as detect any inappropriate content. Amazon Rekognition also provides highly accurate facial analysis and facial search capabilities that you can use to detect, analyze, and compare faces for a wide variety of user verification, people counting, and public safety use cases. With Amazon Rekognition Custom Labels, you can identify the objects and scenes in images that are specific to your business needs. For example, you can build a model to classify specific machine parts on your assembly line or to detect unhealthy plants. Amazon Rekognition Custom Labels takes care of the heavy lifting of model development for you, so no machine learning experience is required. You simply need to supply images of objects or scenes you want to identify, and the service handles the rest.

This neural machine translation service is the latest addition in AWS cheat sheet.

Amazon Translate is a neural machine translation service that delivers fast, high-quality, and affordable language translation. Neural machine translation is a form of language translation automation that uses deep learning models to deliver more accurate and more natural sounding translation than traditional statistical and rule-based translation algorithms. Amazon Translate allows you to localize content - such as websites and applications - for international users, and to easily translate large volumes of text efficiently.

Amazon Transcribe is an automatic speech recognition (ASR) service for adding speech-to-text capabilities in applications.

Amazon Transcribe makes it easy for developers to add speech to text capability to their applications. Audio data is virtually impossible for computers to search and analyze. Therefore, recorded speech needs to be converted to text before it can be used in applications. Historically, customers had to work with transcription providers that required them to sign expensive contracts and were hard to integrate into their technology stacks to accomplish this task. Many of these providers use outdated technology that does not adapt well to different scenarios, like low-fidelity phone audio common in contact centers, which results in poor accuracy.

Amazon Transcribe uses a deep learning process called automatic speech recognition (ASR) to convert speech to text quickly and accurately. Amazon Transcribe can be used to transcribe customer service calls, to automate closed captioning and subtitling, and to generate metadata for media assets to create a fully searchable archive. You can use Amazon Transcribe Medical to add medical speech to text capabilities to clinical documentation applications.

DeepLens is an ideal instrument for developers to leverage deep learning.

AWS DeepLens helps put machine learning in the hands of developers, literally, with a fully programmable video camera, tutorials, code, and pre-trained models designed to expand deep learning skills.

Deep Learning AMIs provide tools and infrastructure to speed up deep learning at any scale in the cloud.

The AWS Deep Learning AMIs provide machine learning practitioners and researchers with the infrastructure and tools to accelerate deep learning in the cloud, at any scale. You can quickly launch Amazon EC2 instances pre-installed with popular deep learning frameworks and interfaces such as TensorFlow, PyTorch, Apache MXNet, Chainer, Gluon, Horovod, and Keras to train sophisticated, custom AI models, experiment with new algorithms, or to learn new skills and techniques.

Whether you need Amazon EC2 GPU or CPU instances, there is no additional charge for the Deep Learning AMIs – you only pay for the AWS resources needed to store and run your applications.

The training and inference framework provides a concise and easy-to-use API for machine learning.

Apache MXNet is a fast and scalable training and inference framework with an easy-to-use, concise API for machine learning. MXNet includes the Gluon interface that allows developers of all skill levels

to get started with deep learning on the cloud, on edge devices, and on mobile apps. In just a few lines of Glueon code, you can build linear regression, convolutional networks and recurrent LSTMs for object detection, speech recognition, recommendation, and personalization. You can get started with MxNet on AWS with a fully-managed experience using Amazon SageMaker, a platform to build, train, and deploy machine learning models at scale. Or, you can use the AWS Deep Learning AMIs to build custom environments and workflows with MxNet as well as other frameworks including TensorFlow, PyTorch, Chainer, Keras, Caffe, Caffe2, and Microsoft Cognitive Toolkit.

TensorFlow is a framework that aptly fits the AWS cheat sheet as a tool for a better starting point for deep learning.

TensorFlow™ enables developers to get quickly and easily started with deep learning in the cloud. The framework has broad support in the industry and has become a popular choice for deep learning research and application development, particularly in areas such as computer vision, natural language understanding and speech translation.

You can get started on AWS with a fully managed TensorFlow experience with Amazon SageMaker, a platform to build, train, and deploy machine learning models at scale. Or, you can use the AWS Deep Learning AMIs to build custom environments and workflows with TensorFlow and other popular frameworks including Apache MXNet, PyTorch, Caffe, Caffe2, Chainer, Glueon, Keras, and Microsoft Cognitive Toolkit.

Personalize is a machine learning service for creating individualized recommendations for application users.

Amazon Personalize enables you to improve customer engagement and conversion by powering real-time personalized product and content recommendations, and targeted marketing promotions. It is based on over 20 years of recommendation experience and research in machine learning at Amazon. It's like having your very own Amazon.com machine learning recommendation system 24 hours a day. You can get started with no prior machine learning experience using simple APIs to easily integrate sophisticated personalization capabilities into your systems and platform. Amazon Personalize automates the complex steps required to build, train, tune, and deploy a machine learning recommendation model so you can deliver personalized user experiences faster.

All of your data is encrypted to be private and secure and is only used to create recommendations for your users. You pay only for what you use, and there are no minimum fees and no upfront commitments.

This AWS product is in preview and provides highly precise forecasts based on machine learning.

Amazon Forecast is a fully managed service that uses machine learning to deliver highly accurate forecasts. Companies today use everything from simple spreadsheets to complex financial planning software to attempt to accurately forecast future business outcomes such as product demand, resource needs, or financial performance. These tools build forecasts by looking at a historical series of data, which is called time series data. For example, such tools may try to predict the future sales of a raincoat by looking only at its previous sales data with the underlying assumption that the future is determined by the past. This approach can struggle to produce accurate forecasts for large

sets of data that have irregular trends. Also, it fails to easily combine data series that change over time (such as price, discounts, web traffic, and number of employees) with relevant independent variables like product features and store locations.

Based on the same technology used at Amazon.com, Amazon Forecast uses machine learning to combine time series data with additional variables to build forecasts. Amazon Forecast requires no machine learning experience to get started. You only need to provide historical data, plus any additional data that you believe may impact your forecasts. For example, the demand for a particular color of a shirt may change with the seasons and store location. This complex relationship is hard to determine on its own, but machine learning is ideally suited to recognize it. Once you provide your data, Amazon Forecast will automatically examine it, identify what is meaningful, and produce a forecasting model capable of making predictions that are up to 50% more accurate than looking at time series data alone.

Amazon Forecast is a fully managed service, so there are no servers to provision, and no machine learning models to build, train, or deploy. You pay only for what you use, and there are no minimum fees and no upfront commitments.

Amazon Inferentia is a machine learning inference chip tailored for delivering high performance at low cost.

The demand for deep learning acceleration is growing at a rapid pace, and across a wide range of applications. Applications such as personalized search recommendations, dynamic pricing, or automated customer support, are growing in sophistication and becoming more expensive to run in production. As more applications embed machine learning capabilities, a higher percentage of workloads needs acceleration, including ones that need low-latency, real-time performance. These applications benefit from infrastructure optimized to execute machine learning algorithms.

AWS's vision is to make deep learning pervasive for everyday developers and to democratize access to cutting edge hardware made available in a low-cost pay-as-you-go usage model. AWS Inferentia is a big step and commitment that will help us deliver on this vision. AWS Inferentia is designed to provide high inference performance in the cloud, drive down the total cost of inference, and to make it easy for you to integrate machine learning as part of your standard application features and capabilities. AWS Inferentia comes with the AWS Neuron software development kit (SDK) consisting of a compiler, run-time, and profiling tools. It enables complex neural net models, created, and trained in popular frameworks such as Tensorflow, PyTorch, and MXNet, to be executed using AWS Inferentia based Amazon EC2 Inf1 instances.

Textract helps in the automatic extraction of data and text from scanned documents.

Amazon Textract is a fully managed machine learning service that automatically extracts text and data from scanned documents that goes beyond simple optical character recognition (OCR) to identify, understand, and extract data from forms and tables. Many companies today extract data from scanned documents, such as PDF's, tables and forms, through manual data entry (that is slow, expensive and prone to errors), or through simple OCR software that requires manual configuration which needs to be updated each time the form changes to be usable.

To overcome these manual processes, Textract uses machine learning to instantly read and process any type of document, accurately extracting text, forms, tables and, other data without the need for

any manual effort or custom code. With Textract you can quickly automate manual document activities, enabling you to process millions of document pages in hours. Once the information is captured, you can act on it within your business applications to initiate next steps for a loan application, tax document, enrollment form or medical claims processing. Additionally, you can create smart search indexes, or add in human reviews with Amazon Augmented AI to review nuanced or sensitive data.

A prominent addition in AWS cheat sheet, [Amazon Elastic Inference](#) helps in attaching low-cost GPU-based acceleration to Amazon SageMaker and EC2 instances.

Amazon Elastic Inference allows you to attach low-cost GPU-powered acceleration to Amazon EC2 and SageMaker instances or Amazon ECS tasks, to reduce the cost of running deep learning inference by up to 75%. Amazon Elastic Inference supports TensorFlow, Apache MXNet, PyTorch and ONNX models.

Inference is the process of making predictions using a trained model. In deep learning applications, inference accounts for up to 90% of total operational costs for two reasons. Firstly, standalone GPU instances are typically designed for model training - not for inference. While training jobs batch process hundreds of data samples in parallel, inference jobs usually process a single input in real time, and thus consume a small amount of GPU compute. This makes standalone GPU inference cost inefficient. On the other hand, standalone CPU instances are not specialized for matrix operations, and thus are often too slow for deep learning inference. Secondly, different models have different CPU, GPU, and memory requirements. Optimizing for one resource can lead to underutilization of other resources and higher costs.

Amazon Elastic Inference solves these problems by allowing you to attach just the right amount of GPU-powered inference acceleration to any EC2 or SageMaker instance type or ECS task, with no code changes. With Amazon Elastic Inference, you can choose any CPU instance in AWS that is best suited to the overall compute and memory needs of your application, and then separately configure the right amount of GPU-powered inference acceleration, allowing you to efficiently utilize resources and reduce costs.

[This tool](#) helps in building highly precise training datasets for machine learning.

Amazon SageMaker Ground Truth is a fully managed data labeling service that makes it easy to build highly accurate training datasets for machine learning. Get started with labeling your data in minutes through the SageMaker Ground Truth console using custom or built-in data labeling workflows. These workflows support a variety of use cases including 3D point clouds, video, images, and text. As part of the workflows, labelers have access to assistive labeling features such as automatic 3D cuboid snapping, removal of distortion in 2D images, and auto-segment tools to reduce the time required to label datasets. In addition, Ground Truth offers automatic data labeling which uses a machine learning model to label your data.

DeepRacer is the autonomous scale car for practical experience in reinforcement learning.

AWS DeepRacer gives you an interesting and fun way to get started with reinforcement learning (RL). RL is an advanced machine learning (ML) technique that takes a quite different approach to

training models than other machine learning methods. Its superpower is that it learns complex behaviors without requiring any labeled training data, and can make short term decisions while optimizing for a longer-term goal

This product involves pre-installed docker images with deep learning frameworks. It ensures easier deployment of custom machine learning (ML) environments.

AWS Deep Learning Containers (AWS DL Containers) are Docker images pre-installed with deep learning frameworks to make it easy to deploy custom machine learning (ML) environments quickly by letting you skip the complicated process of building and optimizing your environments from scratch. AWS DL Containers support TensorFlow, PyTorch, and Apache MXNet. You can deploy AWS DL Containers on Amazon SageMaker, Amazon Elastic Kubernetes Service (Amazon EKS), self-managed Kubernetes on Amazon EC2, Amazon Elastic Container Service (Amazon ECS). The containers are available through Amazon Elastic Container Registry (Amazon ECR) and AWS Marketplace at no cost--you pay only for the resources that you use. Get started with this tutorial.

Docker containers are a popular way to deploy custom ML environments that run consistently in multiple environments. But building and testing container images for deep learning is hard, error-prone, and can take days due to software dependencies and version compatibility issues. These images also need to be optimized to distribute and scale ML workloads efficiently across a cluster of instances, which requires specialized expertise. This process must be repeated when framework updates are released. All of this is undifferentiated heavy lifting that takes valuable developer time and slows down your pace of innovation.

AWS DL Containers provide Docker images that are pre-installed and tested with the latest versions of popular deep learning frameworks and the libraries they require. AWS DL Containers come optimized to distribute ML workloads efficiently on clusters of instances on AWS, so that you get high performance and scalability right away.

CloudEndure Migration tool helps in simpler, faster, and reduced cost cloud migration.

Cloud migration does not need to be a complex, time consuming, or costly endeavor. CloudEndure Migration simplifies, expedites, and reduces the cost of cloud migration by offering a highly automated lift-and-shift solution.

Enterprises looking to quickly rehost many machines to AWS can use CloudEndure Migration without worrying about compatibility, performance disruption, or long cutover windows. Any re-architecture that needs to be done can be performed more easily after your machines are running on AWS.

CloudEndure Migration conducts continuous, block-level data replication of your source machines into a staging area in your AWS account without causing downtime or impacting performance. When you're ready to launch the production machines, CloudEndure Migration automatically converts your machines from their source infrastructure into the AWS infrastructure so they can boot and run natively in AWS.

With CloudEndure Migration, an agent-based solution, you can migrate legacy applications as well as all applications and databases that run on supported versions of Windows and Linux OS. This includes Windows Server versions 2003/2008/2012/2016/2019 and Linux distributions, such as

CentOS, RHEL, OEL, SUSE, Ubuntu, and Debian. CloudEndure Migration supports common databases, including Oracle and SQL Server, as well as mission-critical applications such as SAP.

This product helps in planning migration projects based on data from on-premises data centers.

AWS Application Discovery Service helps enterprise customers plan migration projects by gathering information about their on-premises data centers.

Planning data center migrations can involve thousands of workloads that are often deeply interdependent. Server utilization data and dependency mapping are important early first steps in the migration process. AWS Application Discovery Service collects and presents configuration, usage, and behavior data from your servers to help you better understand your workloads.

The collected data is retained in encrypted format in an AWS Application Discovery Service data store. You can export this data as a CSV file and use it to estimate the Total Cost of Ownership (TCO) of running on AWS and to plan your migration to AWS. In addition, this data is also available in AWS Migration Hub, where you can migrate the discovered servers and track their progress as they get migrated to AWS.

AWS Migration Hub is a single location facility for tracking the progress of application migration.

AWS Migration Hub provides a single location to track the progress of application migrations across multiple AWS and partner solutions. Using Migration Hub allows you to choose the AWS and partner migration tools that best fit your needs, while providing visibility into the status of migrations across your portfolio of applications. Migration Hub also provides key metrics and progress for individual applications, regardless of which tools are being used to migrate them. For example, you might use AWS Database Migration Service, AWS Server Migration Service, CloudEndure Migration, and partner migration tools such as ATADATA ATAmotion to migrate an application comprised of a database, virtualized web servers, and a bare metal server. Using Migration Hub, you can view the migration progress of all the resources in the application. This allows you to quickly get progress updates across all of your migrations, easily identify and troubleshoot any issues, and reduce the overall time and effort spent on your migration projects.

AWS Migration Hub provides a single place to monitor migrations in any AWS region where your migration tools are available. There is no additional cost for using Migration Hub. You only pay for the cost of the individual migration tools you use, and any resources being consumed on AWS.

AWS Server Migration Service is an Agentless service for migration of multiple on-premise workloads.

AWS Server Migration Service (SMS) is an agentless service which makes it easier and faster for you to migrate thousands of on-premises workloads to AWS. AWS SMS allows you to automate, schedule, and track incremental replications of live server volumes, making it easier for you to coordinate large-scale server migrations.

AWS Snowball Family provides the facility of different physical devices and capacity points in this service.

Applications are moving to the cloud faster today than ever before. A new category of applications requires increased capabilities and performance at the edge of the cloud, or even beyond the edge of the network.

AWS provides edge infrastructure and software that moves data processing and analysis as close as necessary to where data is created to deliver intelligent, real-time responsiveness and streamline the amount of data transferred. This includes deploying AWS managed hardware and software to locations outside AWS Regions and even beyond AWS Outposts.

The AWS Snow Family helps customers that need to run operations in austere, non-data center environments, and in locations where there's lack of consistent network connectivity. The Snow Family, comprised of AWS Snowcone, AWS Snowball, and AWS Snowmobile, offers a number of physical devices and capacity points, most with built-in computing capabilities. These services help physically transport up to exabytes of data into and out of AWS. Snow Family devices are owned and managed by AWS and integrate with AWS security, monitoring, storage management, and computing capabilities.

AWS DataSync is a data transfer service for easier automation of data moving between on-premises storage and Amazon S3 or EFS.

AWS DataSync makes it simple and fast to move large amounts of data online between on-premises storage and Amazon S3, Amazon Elastic File System (Amazon EFS), or Amazon FSx for Windows File Server. Manual tasks related to data transfers can slow down migrations and burden IT operations. DataSync eliminates or automatically handles many of these tasks, including scripting copy jobs, scheduling, and monitoring transfers, validating data, and optimizing network utilization. The DataSync software agent connects to your Network File System (NFS), Server Message Block (SMB) storage, and your self-managed object storage, so you don't have to modify your applications. DataSync can transfer hundreds of terabytes and millions of files at speeds up to 10 times faster than open-source tools, over the internet or AWS Direct Connect links. You can use DataSync to migrate active data sets or archives to AWS, transfer data to the cloud for timely analysis and processing, or replicate data to AWS for business continuity. Getting started with DataSync is easy: deploy the DataSync agent, connect it to your file system, select your AWS storage resources, and start moving data between them. You pay only for the data you move.

AWS Transfer for SFTP is a completely managed service for easier transfer of files to and from Amazon S3 through the Secure Shell (SSH) File Transfer Protocol.

The AWS Transfer Family provides fully managed support for file transfers directly into and out of Amazon S3. With support for Secure File Transfer Protocol (SFTP), File Transfer Protocol over SSL (FTPS), and File Transfer Protocol (FTP), the AWS Transfer Family helps you seamlessly migrate your file transfer workflows to AWS by integrating with existing authentication systems and providing DNS routing with Amazon Route 53 so nothing changes for your customers and partners, or their applications. With your data in Amazon S3, you can use it with AWS services for processing, analytics, machine learning, and archiving. Getting started with the AWS Transfer Family is easy; there is no infrastructure to buy and set up.

AWS RoboMaker is an ideal tool for developing, testing, and deployment of intelligent robotics applications at scale.

Robots are being used more widely in society for purposes that are increasing in sophistication such as complex assembly, picking and packing, last-mile delivery, environmental monitoring, search and rescue, and assisted surgery. Within the autonomous mobile robot (AMR) and autonomous ground

vehicle (AGV) market segments, robots are being used for commercial logistics and consumer cleaning, delivery, and companionship.

These jobs require higher compute capabilities and often the orchestration of the deployment and operations of large fleets of robots. To function effectively, the robots require the integration of technologies such as image recognition, sensing, artificial intelligence, machine learning, and reinforcement learning in ways new to the field of robotics. Developing, simulating, and deploying smart robotics applications is difficult and time consuming. Now, with AWS RoboMaker, it is easy to enable a robot running ROS to navigate, communicate, comprehend, stream data, and learn. Tasks that once could either not be done or took months can now be done in hours or days.

Presently in preview, addition to AWS Ground Station in the AWS cheat sheet can help in controlling satellite communications.

AWS Ground Station is a fully managed service that lets you control satellite communications, process data, and scale your operations without having to worry about building or managing your own ground station infrastructure. Satellites are used for a wide variety of use cases, including weather forecasting, surface imaging, communications, and video broadcasts. Ground stations form the core of global satellite networks. With AWS Ground Station, you have direct access to AWS services and the AWS Global Infrastructure including a low-latency global fiber network. For example, you can use Amazon S3 to store the downloaded data, Amazon Kinesis Data Streams for managing data ingestion from satellites, Amazon SageMaker for building custom machine learning applications that apply to your data sets. You can save up to 80% on the cost of your ground station operations by paying only for the actual antenna time used and relying on the global footprint of ground stations to download data when and where you need it. There are no long-term commitments, and you gain the ability to rapidly scale your satellite communications on-demand when your business needs it.

One of the prominent highlights of this cheat sheet should deal with the AWS command-line interface commands. The AWS CLI Commands can help readers understand the use of the command-line interface in AWS. The AWS Command Line Interface is an open-source tool that helps in interacting with AWS services through commands. The command-line interface improves functionality with minimal configuration through the command prompt in the terminal program.

Any AWS CLI cheat sheet will inform that all types of IaaS AWS administration, management, and access functions are accessible in AWS CLI. Another important fact about the AWS CLI is that it provides direct access to public APIs of AWS services. However, many beginners face considerable issues with commands in the CLI. Therefore, the following information in this AWS CLI can help you learn some of the basic commands.

- `cat/proc/mounts`: command for displaying a list of mounted drives.
- `rm <filename>`: removing the specific file from the current director.
- `sudo reboot`: rebooting the remove AWS system for viewing results of changes.
- `sudo chmod<options>`: changing the access mode for current directory.
- `sudo rmdir<directory name>`: removing the specific directory.
- `sudo yum -y install <service or feature>`: installing a required support service or feature in the AWS system.
- `sudo mkdir<directory name>`: creating a new directory for holding files.
- `rpm -ql'<package name>`: obtaining a list of utilities in a package.
- `sudo yum update`: installing all required AWS updates.

- `sudo yum search '<package name>'`: searching for a package.
- `sudo yum groupinstall "<group package name>"`: installing a specific group of packages.

This AWS CLI commands only reflects on a tiny share of commands. Further investigation of AWS documentation can reveal info on many other useful commands.

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