Additional Tools and Services

**Compute**

* **Elastic Container Service for Kubernetes(EKS):**
  + EKS is a managed Kubernetes service that makes it easy for you to run Kubernetes on AWS without needing to install, operate and maintain your own Kubernetes control plane
  + EKS is a certified Kubernetes conformant, so existing applications running on upstream Kubernetes are compatible with EKS
  + EKS automatically manages the availability and scalability of the Kubernetes control plane nodes that are responsible for starting and stopping containers, scheduling containers on virtual machines, storing cluster data and other tasks
  + EKS automatically detects and replaces unhealthy control plane nodes for each cluster
* **AWS Batch**
  + With Batch, you can simply package the code for you batch jobs, specifically their dependencies, and submit your batch job using the AWS Management Cosole, CLIs or SDKs
  + Batch allows you to specify execution parameters and job dependencies, and facilitates integration with a broad range of popular batch computing workflow endgines and languages
  + Batch efficiently and dynamically provisions and scales EC2 and Spot instances based on the requirements of your jobs. AWS Batch provides default queues and compute environment definitions that enable you to get started quickly
* **Beanstalk**
  + Beanstalk is the fastest and simplest way to get web applications up and running on AWS
  + Developers simply upload their application code and the service automatically handles all the details such as resource provisioning, load balancing, auto-scaling and monitoring
  + Beanstalk is ideal if you have PHP, Java, Python, Ruby, Node.js, .NET, Go, or Docker web application
  + Beanstalk uses core AWS services such as EC2, Elastic Container Service(ECS), Auto Scaling and ELB to esasily support applications that need to scale to serve millions of users

**Storage**

* **Storage Gateway**
  + Storage Gateway is a hybrid cloud storage
  + Its features make it easy for you to run hybrid cloud workloads at any stage of your cloud adoption, whether it’s getting started with cloud backups, running cloud processing workflows for data generated by on-premises machines, or performing a one-time migration of block volume data or databases
  + Storage Gateway seamlessly connects to your local production or backup applications with NFS, SMB, iSCI or iSCSI-VTL so you can adopt Cloud storage without needing to modify your applications
  + Its protocol conversion and device emulation enables you to access block data and volumes managed by Storage Gateway on top of S3, store files as native S3 objects, and keep virtual tape backups online in a VTL backed by S3 or move the backups to a tape archive tier on Glacier

**Databse**

* **Elasticache**
  + Elasticache offers fully managed Redis and Memcached
  + Seamlessly deploy, run and scale popular open source compatible in-memory data stores
  + ElastiCache can be used to significantly improve latency and throughput for many read-heavy application workloads(such as social networking, gaming, media sharing and Q&A portals) or compute-intensive workloads(such as recommendation engine) by allowing you to store the objects that are often read in cache
  + ElastiCache simplifies and offloads the management, monitoring and operation of in-memory cache environments, enableing you to focus on the differentiating parts of your applications
  + Pay only for the resources you consume based on node hours used
* **Neptune**
  + Fast, reilable, fully-managed graph database service that makes it easy to build and run applications that work with highly connected datasets
  + With Neptune, you can create sophisticated, interactive graph applications that can query billions of relationships in milliseconds. Popular graph query languages Apache TinkerPop Gremlin and W3C’s SPARQL to execute powerful queries that are easy to write and perform well on econnected data

**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
  + For example, you might use Database Migration Service, Server Migration Service, and partner migration tools such as ATADATA
  + Using Migration Hub, you can view the migration progress of all resources in the application
* **Database Migration Service**
  + AWS Database Migration Service helps you migrate databses 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 homogenous migrations such as Oracle to Oracle, as well as heterogeneous migrations such as Oracle to Microsoft SQL Server to Aurora
  + AWS Database Migration Service you can continuously replicate your data with HA and consolidate databases into a petabyte-scale data warehouse by streaming data to Redshift and S3
* **Server Migration Service**
  + Server Migration Service is an agentless service which makes it easier and faster for you to migrate thousands of on-premises workloads to 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

**Networking & Content Delivery**

* **API Gateway**
  + API Gateway is a fully managed service that makes it easy for developers to create, publish, maintain, monitor and secure APIs at any scale
  + With a few clicks in the Console, you can create an API that acts as a ‘front door’ for applications to access data, business logic or functionality from your back-end services
* **Direct Connect**
  + Direct Connect is a cloud service solution that makes it easy to establish a dedicated network connection from your prem to AWS
  + Using DC, you can establish private connectivity between AWS and your datacenter, office, or colocation environment, which in many cases can reduce your network costs, increase bandwidth throughput, and provide a more consistent network experience than internet-based connections
  + Direct Connect lets you establish a dedicated network connection between your network and one of the AWS Direct Connect locations
  + Using industry standard 802.1q VLANs, this dedicated connection can be partitioned into multiple virtual interfaces
  + This allows you to use the same connection to access public resources such as objects stored in S3 using public IP address space, and private resources such as EC2 instances running within a VPC

**Developer Tools**

* **CodeStar**
  + CodeStar enables you to quickly develop, build and deploy applications on AWS. CodeStar provides a unified user interface, enabling you to easily manage your software development activities in one place
  + With CodeStar, you can set up your entire **continuous delivery** toolchain in minutes, allowing you to start releasing code faster. CodeStar makes it easy for your whole team to work tegether securely, allowing you to easily manage access and add owners, contributors and viewers to your pojects
  + With CodeStar, you can use a variety of project templates to start developing applications on EC2, Lambda, Elastic Beanstalk
  + CodeStar projects support many popular programming languages including Java, JavaScript, PHP, Ruby and Python
* **CodeCommit**
  + 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 finrastructure
  + You can use CodeCommit to securely store anything from source code to binaries and it works seamlessly with existing Git tools
* **CodeBuild**
  + 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 don’t 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 compute resources you use
* **CodeDeploy**
  + CodeDeploy is a fully managed deployment service that automates software deployments to a variety of compute services such as EC2, Lambda, and your on-premises servers
  + 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 CodeDeploy to automate software deployments, eliminating the need for error-prone manual operations. The service scales to match your deployment needs, from a single Lambda function to thousands of EC2 instances
* **CodePipeline**
  + CodePipeline is a fully managed **continuous delivery** service that helps you automate your release pipelines for fast and reliable applicatio 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 with CodePipeline with third-party services such as GitHub or with your own custom plugin
* **X-Ray**
  + X-Ray helps developers analyze and debug production, distirbuted 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 end-to-end view of requests as they travel through your applicaion, 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

**Management Tools**

* **CloudFormation**
  + CloudFormation provides a common language for you to describe and provision all the infrastructure resources in your cloud environment
  + CloudFormation allows you to use 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 file serves as the single source of truth for your cloud environment
  + You can use JSON or YAML to describe what AWS resources you want to create and configure
* **Config**
  + 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 he configurations specified in your internal guidelines
  + This enables you to simplify compliance autiditing, security analysis, change management, and operational troubleshooting
* **OpsWorks**
  + 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 Puppte to automate how servers are configured, deployed, and managed across your EC2 instance or on-premises compute environments
* **Service Catalog**
  + 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 form virtual machine images, servers, software and databases to complete multi-tier application architectures
  + 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 on the approved IT services they need
  + Uses CloudFormation templates
* **Systems Manager**
  + Systems Manager gives you visibility and control of your infrastructure in 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 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
* **Managed Services**
  + Managed Services provides ongoing management of your AWS infrastructure so you can focus on your applications
  + By implementing best practices to maintain your infrastructure, AWS Managed Services helps you to reduce your operational overhead and risk
  + Managed Services automates common activities such as change requests, moniroting, patch management, security and backup servicesm and provides full-lifecycle services to provision, run and support your infrastructure
  + Managed Services delivers consistent operations management and predictable results by followitin ITIL best practices, and provides tooling and automation to increase efficiency and reduce your operational overhead and risk

**Analytics**

* **Athena**
  + Athena is an interactive query service that makes it easy to analyze data in S3 using standard SQL
  + Athena is serverless, so there is no infrastructure to manage and you pay only for the queries that you run
  + With a few clicks in the Console, customers can point Athena at their data stored in S3 and begin using standard SQL to run ad-hoc queries and get results in seconds
  + You can use Athena to process logs, perform ad-hoc analysis and run interactive queries
  + Athena scales automatically – executing queries in parallel – so results are fast, even with large datasets and complex queries
* **EMR**
  + Elastic Map Reduce(EMR) provides a managed Hadoop framework that makes it easy, fast and cost-effective to process vast amounts of data across dynamically scalable EC2 instances
  + You can also run other popular distributed frameworks such as Spark, Hbase Presto and Flink to interact with
  + EMR securely and reliably handles a broad set of big data use cases, including log analysis, web indexing, data transformationS, ML, financial analyisis, scientific simulation and binoinformatic
* **CloudSearch**
  + CloudSearch 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
  + CloudSearch supports 34 languages and popular search features such as highlighting, autocomplete and geospacial search
* **ElasticSearch**
  + ElasticSearch service is a fully managed service that makes it easy for you to deploy, secure, operate and scale Elasticsearch to search, analyze and visualize data in real-time
  + You get easy to use APIs and real-time analytics capabilities to pwer use cases such as log analytics, full-text search, application monitoring and clickstream analytics,
* **Kinesis**
  + 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
  + 4 types of Kinesis service:
    - Kinesis Video Streams
      * Makes it easy to securely stream video from connected devices to AWS for analytics, ML and other processing
    - Kinesis Data Streams
      * Enables you to build custom applications that process or analyze streaming data for specialized needs
    - Kinesis Data Firehose
      * Easiest way to load streaming data into data stores and analytics tools
    - Kinesis Data Analytics
      * Easiest way to process and analyze real-time streaming data
* **Data Pipeline**
  + Data Pipeline is a web service that helps you reliable process and move data between AWS compute and storage services such as on-premises data sources, at specified intervals
  + With Data Pipeline, you can regularly access your data where it’s stored, transofmr and process it at scale, and efficiently transfer the results to AWS services such as S3, RDS, DynamoDB and EMR
  + Data Pipeline helps you easily create complex data processing workloads that are fualt toleratn, repeatable, and HA
* **Glue**
  + 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 Console
  + You simply point Glue to your data stored on AWS and Glue discovers your data and stores the associated metadata in the Glue Data Catalog
  + Once cataloged, your data is immediately searchable, queryable and available for ETL
  + Glue generates the code to execute your data transformations and data load processes

**Media Services**

* **Elastic Transcoder**
  + Media transcoder
  + Designed to be highly scalable, easy to use and cost effective way for developers and businesses to convert or transcode media files from their source format into versions that will playback on devices like smartphones, tablets and PCs

**Security, Identity and Compliance**

* **Cognito**
  + Cognito lets you add user sign-up, sign-in, and access control to your web and mobile apps quickly and easily
  + Cognito scales to millions of users and supports sign-in with social identity providers such as FB, Google, and Amazon
* **Certificate Manager**
  + Certificate Manager is a service that lets you easily provision, manage and deploy public and private Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates for use with AWS services and your internal connected resources
  + SSL/TLS certificates are used to secure network communications and establish the identity of websites over the internet as well as resoucews on private networks
  + Certificate Manager removes the time-consuming manual process of purchasing, uploading and renewing SSL/TLS certificats
* **CloudHSM**
  + 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
  + 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
* **AWS Directory Service**
  + AWS Directory Service for Microsoft AD, also known as AWS Managed Microsoft AD, emables your directory-aware workloads and AWS resources to use managed Active Directory in the AWS Cloud
  + Managed Microsoft AD is build on actual Microsoft AD and does not require you to synchronize or replicate data from your existing AD to the cloud
  + You can use standard AD administration tools to take advantage of built-in AD features such as Group Policy and SSO
  + With Managed AD you can easily join EC2, RDS instances into your domain
* **AWS Artifact**
  + Artiffact 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 Artifact include our Service Organization Control reports, Payment Cart Industry 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 Business Associate Addendum(BAA) and Nondiscloure Agreement(NDA)
* **Machine Learning**
  + **Amazon Rekognition**
    - Rekognition makes it easy to add image and video analysis to your applications
    - You just provide an image or video to the Rekognition API and the service can identify the objects, people, text scenes and activities as well as detect any inappropriate content
    - Rekognition also provides highly accurate facial analysis and facial recognition on images and video that you provide
    - You can detect, analyze and compare faces for a whide variety of user verification, people counting and public saftey use cases
  + **SageMaker**
    - SageMaker is a fully-managed platform that enables developers and data scientists to quickly and easily build, train and deploy ML models at any scale
    - SageMaker removes all the barriers that typically slow down developers who want to use ML
  + **Comprehend**
    - Comprehend is a NLP service that uses ML to find insights and relationships in text
    - The service identifies the language of the ext; 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
    - Using these APIs you can analyze text and apply the results in a wide range of applications including voice of customer analysis, intelligent document search, and content personalization for web applications
  + **Transcribe**
    - Transcribe is an automatic speech recognition(ASR) service that makes it easy for developers to add speech-to-text capability to their applications
    - Using the Amazon Transcribe API you can analyze audio files stored in S3 and have the service return a text file of the transcribed speech
    - Transcribe can be used for lots of common applications, including the transcription of customer service calls and generating subtitles on audio and video content
    - The service can transcribe audio files stored in common formats, like WAV and MP3, with time stamps for every word so that you can easily locate the audio in the original source by searching for text

**Mobile Services**

* **AppSync**
  + AppSync makes it easy to build data-driven mobile and browser-based apps that deliver responsive, collaborative experiences by keeping the data updated when devices are connected, enabling the app to use local data when offline, and synchronizing the data when the devices reconnect
  + AppSync uses the open standard GraphQL query language so you can request, change, and subscribe to the exact data you need with just a few lines of code
* **Device Farm**
  + Device Farm is an app testing service that lets you test and interact with your Android iOS and web apps on many devices at once, or reproduce issues on a device in real time
  + View video, screenshots, logs, and performance data to pinpoint and fix issues and increase quality before shipping your app

**Application Integration**

* **Step Functions**
  + Step Functions lets you coordinate multiple AWS services into serverless workflows so you can build and update apps quickly
  + Using Step Functions, you can design and run workflows that stitch together services such as Lambda, and ECS into feature-rich applications
  + Workflows are made up of a series of steps, with the output of one step acting as an input into the next
* **MQ**
  + 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 brokersallow different software systems-often using different programming languages, and on different platforms to communicate and exchange information
  + Messaging is the communications backbone that connects and integrates the components of distributed applications such as order processing, inventory management and order fulfillment for e-commerce
* **SQS**
  + Simple Queue Service is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems and servlerless 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
* **SWF**
  + SWF helps developers build run and scale background jobs that have parallel or sequential steps
  + You can think of SWF as a fully-managed state tracker and task coordinater in the cloud

**Internet of Things**

* **IoT Core:**
  + IoT Core is a managed cloud service that lets connected devices easily and securely interact with cloud applications and other devices
  + IoT Core can support billions of devices and trillions of messages, and can process and route those messages to AWS endpoints and other devices reliably and securely
  + IoT Core your applications can keep track of and communicate with all your devices all the time even when they aren’t connected
* **Desktop and App Streaming**
  + **Amazon Workspaces:**
    - Workspace is a managed, secure cloud desktop service. You can use 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
    - WorksSpaces offers you an easy way to provide a secure, managed, cloud-based virtual desktop experience to your end-users
    - Unlinke traditional on-premises Virtual Desktop Infrastructure(VDI) solutions, you don’t have to worry about procuring, deploying, and managing a complex environment – WorkSpaces takes care of the heavy lifting and provides a fully managed service