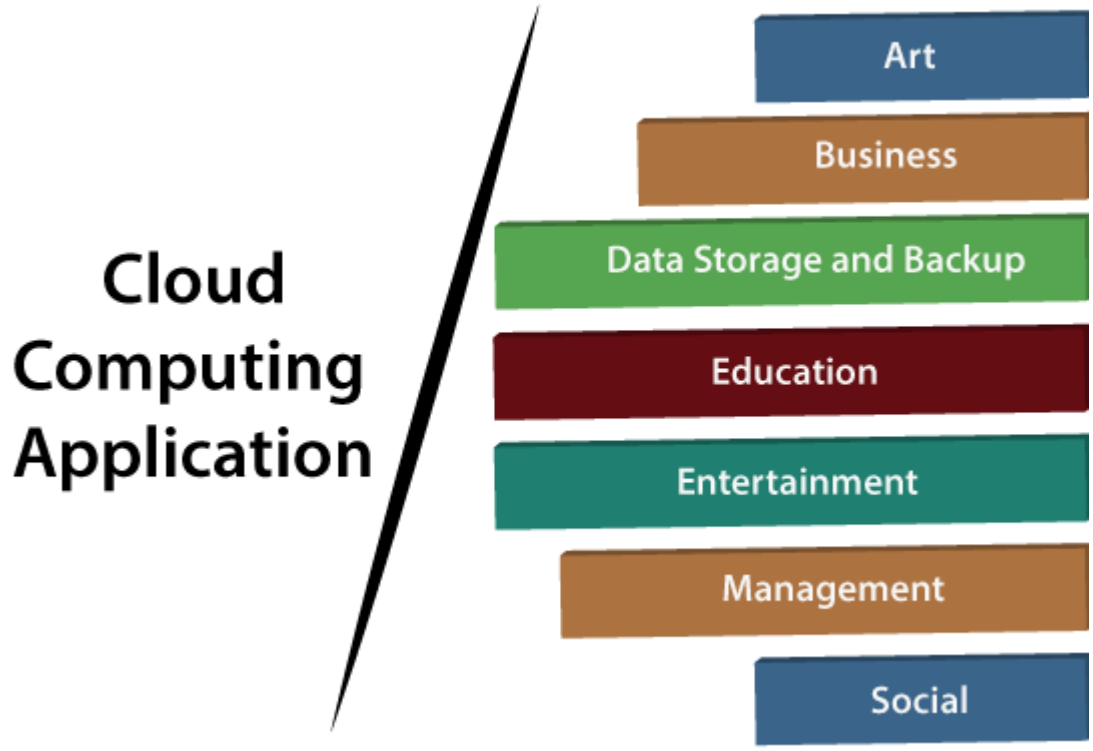
Cloud Computing Applications

Cloud service providers provide various applications in the field of art, business, data storage and backup services, education, entertainment, management, social networking, etc.

The most widely used cloud computing applications are given below -



1. Art Applications

Cloud computing offers various art applications for quickly and easily design **attractive cards, booklets,** and **images**. Some most commonly used cloud art applications are given below:

i. Moo

Moo is one of the best cloud art applications. It is used for designing and printing business cards, postcards, and mini cards.

ii. Vistaprint

Vistaprint allows us to easily design various printed marketing products such as business cards, Postcards, Booklets, and wedding invitations cards.

iii. Adobe Creative Cloud

Adobe creative cloud is made for designers, artists, filmmakers, and other creative professionals. It is a suite of apps which includes PhotoShop image editing programming, Illustrator, InDesign, TypeKit, Dreamweaver, XD, and Audition.

2. Business Applications

Business applications are based on cloud service providers. Today, every organization requires the cloud business application to grow their business. It also ensures that business applications are 24*7 available to users.

There are the following business applications of cloud computing -

i. MailChimp

MailChimp is an **email publishing platform** which provides various options to **design, send,** and **save** templates for emails.

iii. Salesforce

Salesforce platform provides tools for sales, service, marketing, e-commerce, and more. It also provides a cloud development platform.

iv. Chatter

Chatter helps us to **share important information** about the organization in real time.

v. Bitrix24

Bitrix24 is a **collaboration** platform which provides communication, management, and social collaboration tools.

vi. Paypal

Paypal offers the simplest and easiest **online payment** mode using a secure internet account. Paypal accepts the payment through debit cards, credit cards, and also from Paypal account holders.

vii. Slack

Slack stands for **Searchable Log of all Conversation and Knowledge**. It provides a **user-friendly** interface that helps us to create public and private channels for communication.

viii. Quickbooks

Quickbooks works on the terminology "**Run Enterprise anytime, anywhere, on any device**." It provides online accounting solutions for the business. It allows more than 20 users to work simultaneously on the same system.

3. Data Storage and Backup Applications

Cloud computing allows us to store information (data, files, images, audios, and videos) on the cloud and access this information using an internet connection. As the cloud provider is responsible for providing security, so they offer various backup recovery application for retrieving the lost data.

A list of data storage and backup applications in the cloud are given below -

i. Box.com

Box provides an online environment for **secure content management, workflow,** and **collaboration**. It allows us to store different files such as Excel, Word, PDF, and images on the cloud. The main advantage of using box is that it provides drag & drop service for files and easily integrates with Office 365, G Suite, Salesforce, and more than 1400 tools.

ii. Mozy

Mozy provides powerful **online backup solutions** for our personal and business data. It schedules automatically back up for each day at a specific time.

iii. Joukuu

Joukuu provides the simplest way to **share** and **track cloud-based backup files**. Many users use joukuu to search files, folders, and collaborate on documents.

iv. Google G Suite

Google G Suite is one of the best **cloud storage** and **backup** application. It includes Google Calendar, Docs, Forms, Google+, Hangouts, as well as cloud storage and tools for managing cloud apps. The most popular app in the Google G Suite is Gmail. Gmail offers free email services to users.

4. Education Applications

Cloud computing in the education sector becomes very popular. It offers various **online distance learning platforms** and **student information portals** to the students. The advantage of using cloud in the field of education is that it offers strong virtual classroom environments, Ease of accessibility, secure data storage, scalability, greater reach for the students, and minimal hardware requirements for the applications.

There are the following education applications offered by the cloud -

i. Google Apps for Education

Google Apps for Education is the most widely used platform for free web-based email, calendar, documents, and collaborative study.

ii. Chromebooks for Education

Chromebook for Education is one of the most important Google's projects. It is designed for the purpose that it enhances education innovation.

iii. Tablets with Google Play for Education

It allows educators to quickly implement the latest technology solutions into the classroom and make it available to their students.

iv. AWS in Education

AWS cloud provides an education-friendly environment to universities, community colleges, and schools.

5. Entertainment Applications

Entertainment industries use a **multi-cloud strategy** to interact with the target audience. Cloud computing offers various entertainment applications such as online games and video conferencing.

i. Online games

Today, cloud gaming becomes one of the most important entertainment media. It offers various online games that run remotely from the cloud. The best cloud gaming services are Shaow, GeForce Now, Vortex, Project xCloud, and PlayStation Now.

ii. Video Conferencing Apps

Video conferencing apps provides a simple and instant connected experience. It allows us to communicate with our business partners, friends, and relatives using a cloud-based video conferencing. The benefits of using video conferencing are that it reduces cost, increases efficiency, and removes interoperability.

6. Management Applications

Cloud computing offers various cloud management tools which help admins to manage all types of cloud activities, such as resource deployment, data integration, and disaster recovery. These management tools also provide administrative control over the platforms, applications, and infrastructure.

Some important management applications are -

i. Toggl

Toggl helps users to track allocated time period for a particular project.

ii. Evernote

Evernote allows you to sync and save your recorded notes, typed notes, and other notes in one convenient place. It is available for both free as well as a paid version.

It uses platforms like Windows, macOS, Android, iOS, Browser, and Unix.

iii. Outright

Outright is used by management users for the purpose of accounts. It helps to track income, expenses, profits, and losses in real-time environment.

iv. GoToMeeting

GoToMeeting provides **Video Conferencing** and **online meeting apps**, which allows you to start a meeting with your business partners from anytime, anywhere using mobile phones or tablets. Using GoToMeeting app, you can perform the tasks related to the management such as join meetings in seconds, view presentations on the shared screen, get alerts for upcoming meetings, etc.

7. Social Applications

Social cloud applications allow a large number of users to connect with each other using social networking applications such as **Facebook, Twitter, Linkedln,** etc.

There are the following cloud based social applications -

i. Facebook

Facebook is a **social networking website** which allows active users to share files, photos, videos, status, more to their friends, relatives, and business partners using the cloud storage system. On Facebook, we will always get notifications when our friends like and comment on the posts.

ii. Twitter

Twitter is a **social networking** site. It is a **microblogging** system. It allows users to follow high profile celebrities, friends, relatives, and receive news. It sends and receives short posts called tweets.

iii. Yammer

Yammer is the **best team collaboration** tool that allows a team of employees to chat, share images, documents, and videos.

iv. LinkedIn

LinkedIn is a **social network** for students, freshers, and professionals.

Third Party Cloud Services

What are third party cloud services?

The third party cloud services is the services in which user want to acquire when he/she is not getting that service with acquired or hired cloud provider.

Advantages:

1. Maintenance and support: If something goes wrong it is the duty of the provider to ensure the problem is fixed.

2. Skilled company with all the resource: When using a third party for cloud computing infrastructure you know you are benefiting from a service whereby the staff are highly trained in this field and the company has all the resources necessary. it's unlikely you would have this if you were to opt for a personal cloud , meaning lots of time and money would need to be invested.

3. Security Benefit: A lot of company feel more secure putting their data in the hands of an experienced cloud computing provider rather than jumping into the unknown and trying to manage the security of their pivotal data themselves

4. Cost advantages: Third party clouds are particularly advantageous for SMBs and such like since they do not require huge outlays. To be able to bring your infrastructure in-house you would need to make a sizeable investment.

Disadvantages:

1. Security worries: You are entirely responsible for the security of your data. Yet , time and resources will need to be heavily to get it right.

2. Lack of control: With third party cloud computing you have minimal control over the likes of how quickly you can expand the cloud, the granularity of its management.

3. Potential cost drawbacks: If you were to go down the route of a personal cloud you would be able to keep your on-going costs to a minimum, although the upfront expenses will likely be high. Also, with third party computing you will need to pay for more space whenever you run out.

Examples:

Google App Engine

Google App Engine (GAE) is a service for developing and hosting Web applications in Google's data centers, belonging to the platform as a service (PaaS) category of cloud computing. Web applications hosted on GAE are sandboxed and run across multiple servers for redundancy and allowing for scaling of resources according to the traffic requirements of the moment. App Engine automatically allocates additional resources to the servers to accommodate increased load.
Google App Engine is Google's platform as a service offering that allows developers and businesses to build and run applications using Google's advanced infrastructure. These applications are required to be written in one of a few supported languages, namely: Java, Python, PHP and Go. It also requires the use of Google query language and that the database used is Google Big Table. Applications must abide by these standards, so applications either must be developed with GAE in mind or else modified to meet the requirements.

GAE is a platform, so it provides all of the required elements to run and host Web applications, be it on mobile or Web. Without this all-in feature, developers would have to source their own servers, database software and the APIs that would make all of them work properly together, not to mention the entire configuration that must be done. GAE takes this burden off the developers so they can concentrate on the app front end and functionality, driving better user experience.

Advantages of GAE include:

- Readily available servers with no configuration requirement
- Power scaling function all the way down to "free" when resource usage is minimal
- Automated cloud computing tools

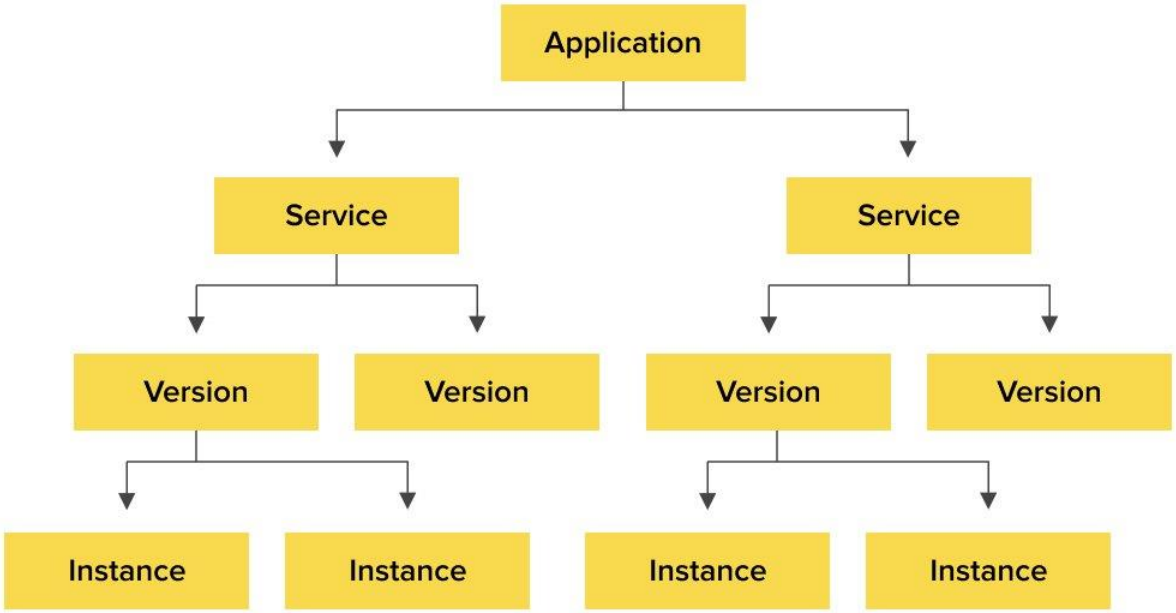
Building applications on the cloud is gaining traction as it accelerates your business opportunities while ensuring availability, security, accessibility, and scalability. However, to start with creating web applications, you would require a suitable cloud computing technology. This is where Google App Engine fits in by

allowing you to build and host web applications on a fully-managed serverless platform.

What is Google App Engine? It is a Google Cloud Platform service that helps:

> Build highly scalable applications on a fully managed serverless platform.– Google Cloud

The App Engine architecture in cloud computing looks like this:

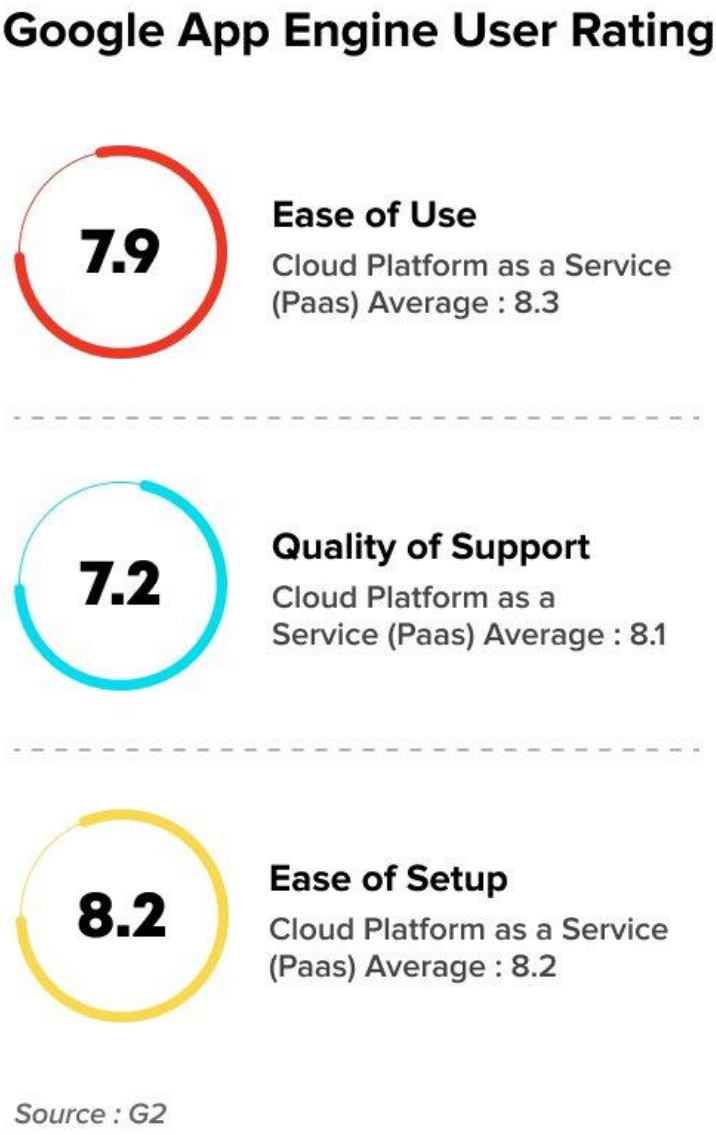


Source : Google Cloud

Services provided by App Engine includes:

- Platform as a Service (PaaS) to build and deploy scalable applications
- Hosting facility in fully-managed data centers
- A fully-managed, flexible environment platform for managing application server and infrastructure
- Support in the form of popular development languages and developer tools

Here's a glimpse of user ratings for Google Cloud App Engine by G2:



Let's discuss more on what is Google App Engine (GAE) and and how it helps in cloud app development.

Is Google App Engine a PaaS (Platform as a Service)?

Google App Engine in cloud computing is a PaaS, Platform as a Service model, i.e., it provides a platform for developers to build scalable applications on

the Google cloud platform. The best thing about GAE is its ability to manage the built applications in Google's data centers.
This way, organizations only have one job to master — building applications on the cloud. For the rest part — the App Engine provides the platform as well as manages the applications.

Major Features of Google App Engine in Cloud Computing

Some of the prominent Google App Engine features include:
1. Collection of Development Languages and Tools

The App Engine supports numerous programming languages for developers and offers the flexibility to import libraries and frameworks through docker containers. You can develop and test an app locally using the SDK containing tools for deploying apps. Every language has its SDK and runtime.
Some of the languages offered include — Python, PHP, .NET, Java, Ruby, C#, Go, Node.Js.
2. Fully Managed

Google allows you to add your web application code to the platform while managing the infrastructure for you. The engine ensures that your web apps are secure and running and saves them from malware and threats by enabling the firewall.
3. Pay-as-you-Go

The app engine works on a pay-as-you-go model, i.e., you only pay for what you use. The app engine automatically scales up resources when the application traffic picks up and vice-versa.
4. Effective Diagnostic Services

Cloud Monitoring and Cloud Logging that helps run app scans to identify bugs. The app reporting document helps developers fix bugs on an immediate basis.

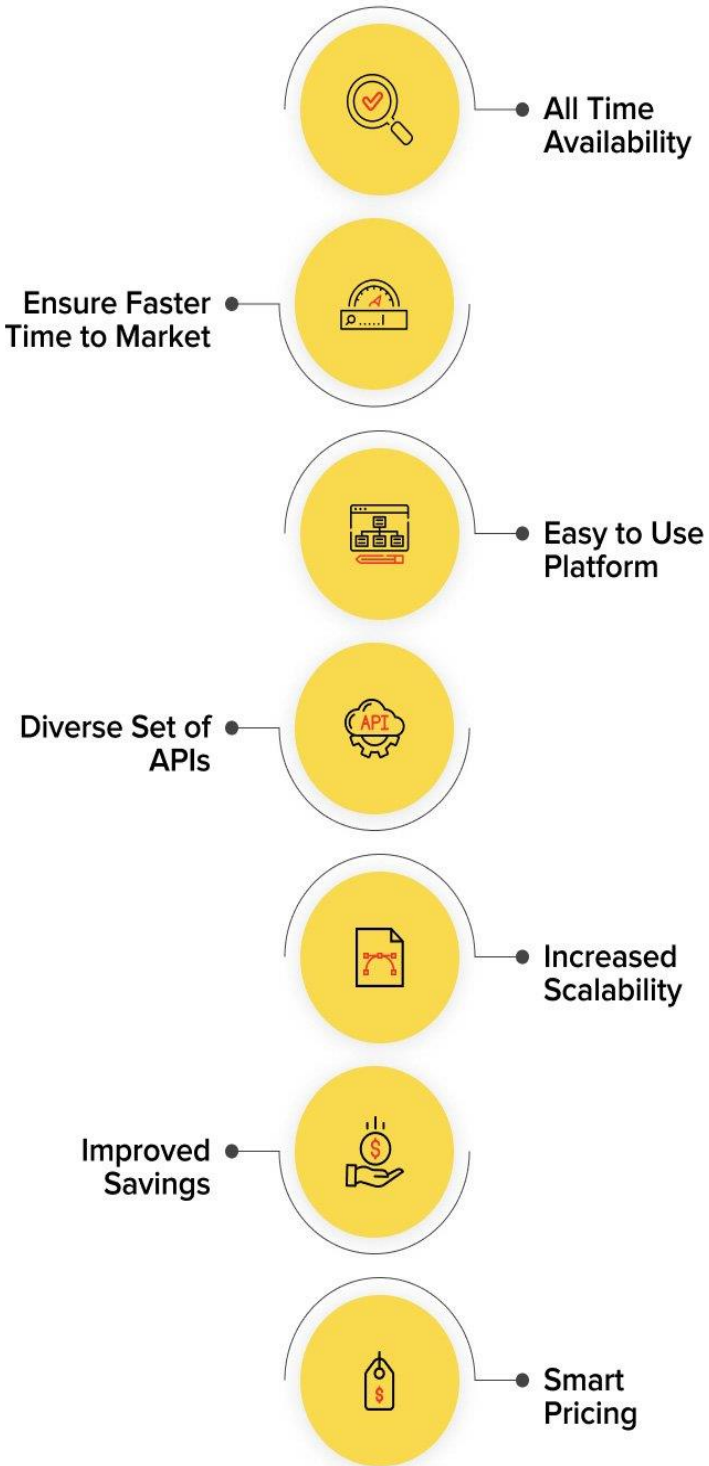
5. Traffic Splitting

The app engine automatically routes the incoming traffic to different versions of the apps as a part of A/B testing. You can plan the consecutive increments based on what version of the app works best.

What are the Benefits of Google App Engine for Websites?

Adopting the App Engine is a smart decision for your organization — it will allow you to innovate and stay valuable. Here the answer to why Google App Engine is a preferable choice for building applications:

Benefits of Google App Engine



net solutions

1. All Time Availability

When you develop and deploy your web applications on the cloud, you enable remote access for your applications. Considering the impact of COVID-19 on businesses, Google App Engine is the right choice that lets the developers develop applications remotely, while the cloud service manages the infrastructure needs.

2. Ensure Faster Time to Market

For your web applications to succeed, ensuring faster time to market is imperative as the requirements are likely to change if the launch time is extended. Using Google App Engine is as easy as it can get for developers. The diverse tool repository and other functionalities ensure that the Google Cloud application development and testing time gets reduced, which, in turn, ensures faster launch time for MVP and consecutive launches.

3. Easy to Use Platform

The developers only require to write code. With zero configuration and server management, you eliminate all the burden to manage and deploy the code. Google App Engine makes it easy to use the platform, which offers the flexibility to focus on other concurrent web applications and processes. The best part is that GAE automatically handles the traffic increase through patching, provisioning, and monitoring.

4. Diverse Set of APIs

Google App Engine has several built-in APIs and services that allow developers to build robust and feature-rich apps. These features include:

- Access to the application log
- Blobstore, serve large data objects
- Google App Engine Cloud Storage
- SSL Support
- Page Speed Services
- Google Cloud Endpoint, for mobile application
- URL Fetch API, User API, Memcache API, Channel API, XXMP API, File API

5. Increased Scalability

Scalability is synonymous with growth — an essential factor that assures success and competitive advantage. The good news is that the Google App Engine cloud development platform is automatically scalable. Whenever the traffic to the web application increases, GAE automatically scales up the resources, and vice-versa.

6. Improved Savings

With Google App Engine, you do not have to spend extra on server management of the app. The Google Cloud service is good at handling the backend process.

Also, Google App Engine pricing is flexible as the resources can scale up/down based on the app's usage. The resources automatically scale up/down based on how the app performs in the market, thus ensuring honest pricing in the end.

7. Smart Pricing

The major concern of organizations revolves around how much does Google App Engine cost? For your convenience, Google App Engine has a daily and a monthly billing cycle, i.e.,

- **Daily:** You will be charged daily for the resources you use
- **Monthly**: All the daily charges are calculated and added to the taxes (if applicable) and debited from your payment method

Also, the App Engine has a dedicated billing dashboard, "App Engine Dashboard" to view and manage your account and subsequent billings.

Amazon Web Services - AWS

What Is AWS(Amazon Web Services): Services, Applications, Advantages and More

AWS needs no formal introduction, given its immense popularity. The leading cloud provider in the marketplace is Amazon Web Services. It provides over 170 AWS services to the developers so they can access them from anywhere at the time of need.

AWS has customers in over 190 countries worldwide, including 5000 ed-tech institutions and 2000 government organizations. Many companies like ESPN, Adobe, Twitter, Netflix, Facebook, BBC, etc., use AWS

services.

For example, Adobe creates and updates software without depending upon the IT teams. It uses its services by offering multi-terabyte operating environments for its clients. By deploying its services with Amazon services, Adobe integrated and operated its software in a simple manner.

Now, before getting started with what is AWS, let us first give you a brief description of what cloud computing is.

What is AWS?

Amazon web service is an online platform that provides scalable and cost-effective cloud computing solutions.

AWS is a broadly adopted cloud platform that offers several on-demand operations like compute power, database storage, content delivery, etc., to help corporates scale and grow.

How Does it Work?

That was all about what is AWS. Next, let's have a look at the history.

History of AWS

- In the year 2002 - AWS services were launched
- In the year 2006- AWS cloud products were launched
- In the year 2012 - AWS had its first customer event
- In the year 2015- AWS achieved $4.6 billion
- In the year 2016- Surpassed the $10 billion revenue target
- In the year 2016- AWS snowball and AWS snowmobile were launched
- In the year 2019- Released approximately 100 cloud services

Applications of AWS

AWS enables businesses to build a number of sophisticated applications. Organizations of every industry and of every size, can run every imaginable use case on AWS. Here are some of the most common applications of AWS:

1. Storage and Backup

One of the reasons why many businesses use AWS is because it offers multiple types of storage to choose from and is easily accessible as well. It can be used for storage and file indexing as well as to run critical business applications.

2. Websites

Businesses can host their websites on the AWS cloud, similar to other web applications.

3. Gaming

There is a lot of computing power needed to run gaming applications. AWS makes it easier to provide the best online gaming experience to gamers across the world.

4. Mobile, Web and Social Applications

A feature that separates AWS from other cloud services is its capability to launch and scale mobile, e-commerce, and SaaS applications. API-driven code on AWS can enable companies to build uncompromisingly scalable applications without requiring any OS and other systems.

Companies using AWS

Whether it's technology giants, startups, government, food manufacturers or retail organizations, there are so many companies across the world using AWS to develop, deploy and host applications. According to Amazon, the number of active AWS users exceeds 1,000,000. Here is a list of companies using AWS:

- Netflix
- Intuit
- Coinbase
- Finra
- Johnson & Johnson
- Capital One

- Adobe
- Airbnb
- AOL
- Hitachi

Advantages of AWS Services

The power of AWS services lies in the fact that it enables businesses to reach the marketplaces with little initial investment. Here are some advantages of AWS services:

1. Security

There is a false misconception that data stored in a public cloud is not secure. On the contrary, not only does AWS offer security tools that are cheaper than other alternatives, but it is one of the most secure, extensive, and reliable cloud platforms.

2. Global Availability

AWS has 80 Availability Zones across 25 geographic regions global data centers.

2. Scalability and Flexibility

AWS offers unlimited flexibility and scalability on demand. This enables organizations to plan their infrastructure roadmap on a subscription basis without full commitment.

3. Little Investment

AWS cloud services enable companies to save expenditures on extra software and hardware. There is no physical data required, which ultimately lowers down operating costs.

Now, that we have understood what is AWS, advantages and application, let us know the AWS services.

AWS Services

Amazon has many services for cloud applications. Let us list down a few key services of the AWS ecosystem and a brief description of how developers use them in their business.

Amazon has a list of services:

- Compute service
- Storage
- Database
- Networking and delivery of content
- Security tools
- Developer tools
- Management tools

Compute Service

These services help developers build, deploy, and scale an application in the cloud platform.

AWS EC2

- It is a web service that allows developers to rent virtual machines and automatically scales the compute capacity when required.
- It offers various instance types to developers so that they can choose required resources such as CPU, memory, storage, and networking capacity based on their application requirements.

AWS Lambda

- It is a serverless compute service. It is also responsible for executing code for applications.
- It helps you execute a program without the hassle of managing servers.

Storage

AWS provides web data storage service for archiving data. Also, its primary advantage is disaster data recovery with high durability.

Amazon S3

- It is an open cloud-based storage service that is utilized for online data backup.
- Amazon S3 provides storage through a web services interface and is designed for developers where web-scale computing can be easier for them. Click here, to know more.

Amazon EBS

- It provides a high availability storage volume for persistent data. It is mainly used by Amazon EC2 instances.
- EBS volumes are used explicitly for primary storage such as file storage, databases storage, and block-level storage.

Database

AWS database domain service offers cost-efficient, highly secure, and scalable database instances in the cloud.

DynamoDB

- It is a flexible NoSQL database service that offers fast and reliable performance with no scalability issues.
- It is a multi-region and durable database with instant built-in security, backup and restores features.

RDS

- It is a managed distributed relational database cloud service that helps developers to operate and scale a database in a simple manner.

- We launched it to simplify the setup, operation, and scaling process for developers while accessing a relational database.

Do you wish to become a cloud expert? Gain the right skills with our Cloud Computing Certification Course and excel in your career, starting today!

Networking and Delivery of Content

It offers a highly secure cloud platform and connects your physical network to your private VN with a high transfer speed.

VPC

- It helps a developer to deploy AWS resources, such as Amazon EC2 instances into a private virtual cloud.
- It gives you control over the complete cloud network environment, including the section of your IP address range, subnets, route table configuration, and network gateways.
- With this, developers can both IPv4 and IPv6 at a time for your resources in a highly secure environment.

Route 53

- It is a web service with a highly available Domain Name System (DNS) that helps users to route software by translating the text into an IP address.
- We launched it for developers to provide them a cost-effective method of routing end users to cloud applications.

Developer Tools

It helps a user build, deploy, and run an application source code automatically. It also updates the server and instance on the workload.

CodeStar

It is a service designed to manage application development in a single place. Here, developers can quickly develop, build and deploy applications on AWS

Code Build

- This removes the hassle of managing physical servers and helps developers build and test code with continuous scaling.
- In simple words, it compiles your code, executes unit tests, and gives output artifacts that are ready to deploy.

Security, Identity & Compliance

It helps in monitoring a safe environment for your AWS resources by providing limited access to specific users.

IAM

- Identity Access Management is a framework that helps in maintaining access to AWS services in a secure way.
- The service gives you Shared access to your AWS account and Secure access to AWS services that run on the AWS EC2 application.

Note: Click here, to know about IAM.

KMS

- It enables users to create and manage the encryption keys that are used for encrypting data.
- The service includes a key generation method where digital sign within your applications becomes easier.

Management Tools

Using this service, an individual can optimize costs, minimize risks, and automate all the resources running efficiently on the AWS infrastructure.

Cloud Watch

- It is a monitoring tool for AWS resources and customer applications running on the AWS platform.
- The service helps you gather and access all your operational data in the form of logs from a single interface.

Cloud Formation

- This service helps you in monitoring all your AWS resources in one place so that you can spend minimum time managing those resources and maximum time developing applications.
- It allows developers to manage their cloud infrastructure either in a text file or a template.

An overview of Azure Cognitive Services

Microsoft Azure has been a leading cloud service provider over the past few years. In this article, we are going to look into an overview of various cognitive services offered by Azure. In simple English, the word '*Cognitive'* means to involve in intellectual activities, such as thinking or reasoning. Similarly, Azure Cognitive Services are also related to intelligence related to the computer and the way humans behave with these computers. For example, these services allow humans to interact with the machines as if they have the intellectual ability to talk, think and respond to events accordingly.

Microsoft has incorporated all these services into its AI and Machine Learning domain on Azure, exposing them in the form of APIs to connect and interact with other applications. These services are very easy and convenient to use once you have a basic understanding of working with APIs. You don't need to be an expert in Machine Learning or Artificial Intelligence in order to consume these. Azure also offers client SDK in multiple programming languages such as C#, JavaScript, Python, etc. so that you can integrate these with your existing applications at ease.

Cognitive Services available in Azure

There are five main categories for Azure Cognitive Services that offer multiple services in each of the categories. These services are as follows:

- Vision – Used mostly for image recognition
- Language – Used to identify natural language and learn from human interactions

- Speech – Used to recognize and convert speech to text and vice versa
- Decision – Used to identify patterns in data and take necessary actions
- Search – Used to integrate web search APIs with your existing applications

Let us now learn more about these services in detail.

Vision

The Vision API is responsible for handling data related to images and videos. You can leverage this API and build interactive applications that can recognize images and videos and extract meaningful information out of them. For example, you can use the APIs to extract the type of objects available in an image or convert handwritten notes to text documents, etc. The main APIs available under this category are as follows:

- **Computer Vision** – This allows the users to perform the classification of images, extract sentiment from images and read handwriting and convert to a text or add descriptions to images based on the intent in the images. You can also use this to recognize human faces and apply tags based on classification, etc.
- **Form Recognizer** – This API can be used to read data from forms and then convert them into electronic formats. Helpful in converting existing paper-based documents into digital PDFs
- **Video Indexer** – Users can use this API to generate captions from videos, identify content, search for specific content, and interpret the text in the videos

- **Face** – This API is specifically designed to detect and identify faces of people, interpret emotions and recognize faces securely and this can then be integrated with existing applications
- **Custom Vision** – This API is a custom computer vision API designed to target specific business needs

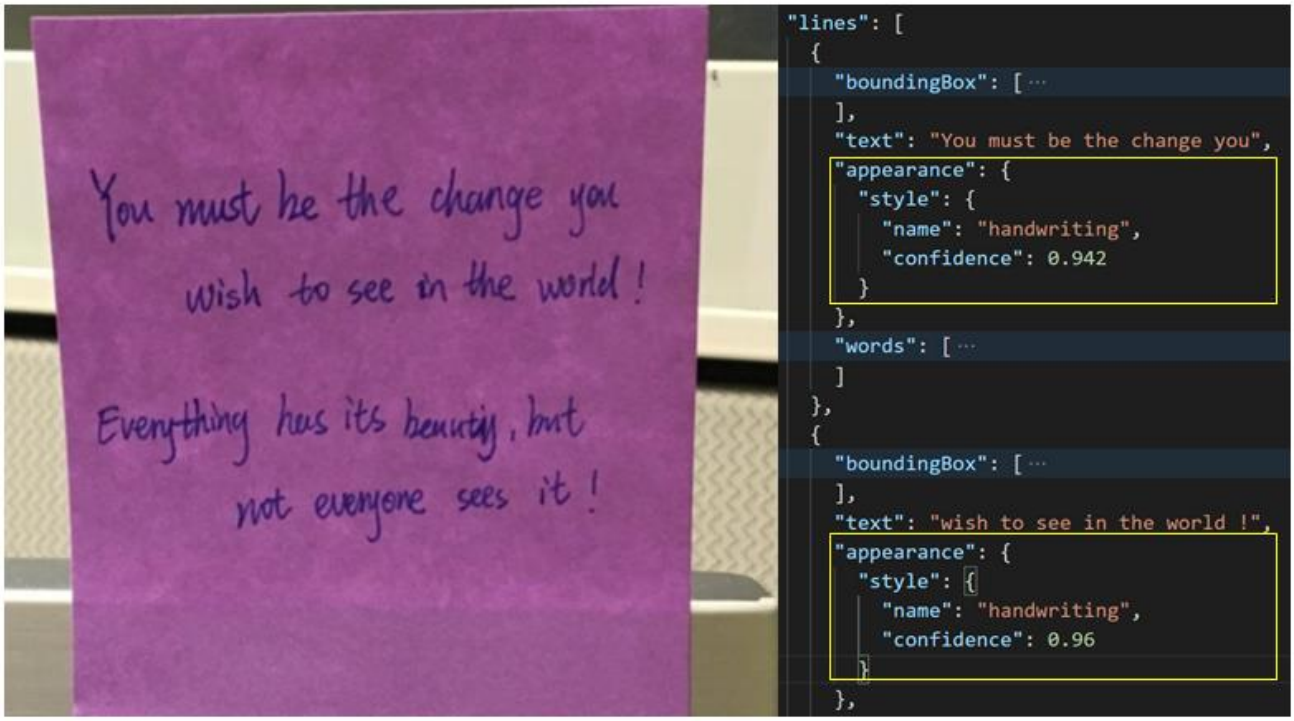


Figure 1 – Vision – Image Recognition API (Source)

As you can see in the figure above, the handwritten notes have been converted into a piece of structured information that can now be used by applications accordingly.

Language

Language APIs are one of the most used services in Azure Cognitive Services. These APIs provide users with the ability to analyze texts and recognize intents and entities from them. This makes it easier for your

application to communicate with your customers more naturally. There are several services available under this category as well.

- **Immersive Reader** – This is a service provided by Microsoft that enables users to generate meaningful information from the text. Suppose you have a document and you want to understand the meaning of the text from it. In such a case, you can use this API and extract meaning from your document
- **LUIS** – This service is used for natural **L**anguage **U**nderstanding and **I**nterpretation **S**ervices. You can use this in your chatbots to learn from users as they talk and interact with your bot
- **QnAMaker** – The QnAMaker is an application created by Microsoft to maintain FAQ question banks for chatbots. If your organization has a FAQ page listed, you can use that information in the QnAMaker and the chatbot can reflect that information to the users while they interact with the bot
- **Text Analytics** – Text Analytics services are mostly used to identify sentiments and named entities from the texts that are being provided to these APIs. It is useful while analysing sentiments of tweets or some other social media applications
- **Translator** – This is a relatively new service that can be used to translate language from one language to another in real-time. At the moment of writing this post, there is a support of more than 90 languages

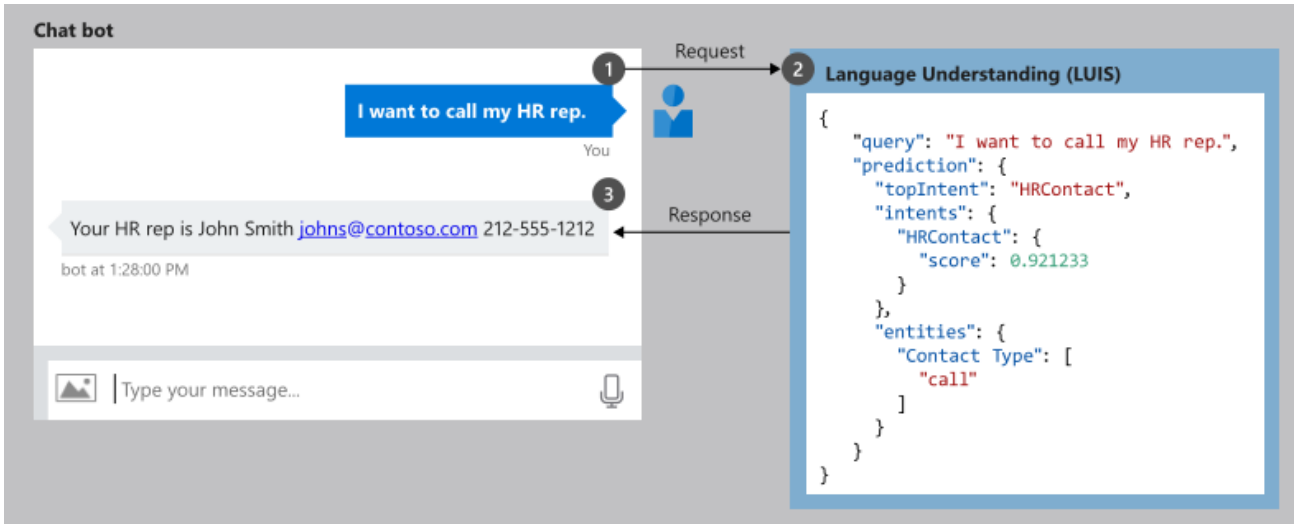


Figure 2 – Language Service – LUIS (Source)

In the above figure, LUIS helps the chatbot to identify the intent and entities linked to the conversation with the user.

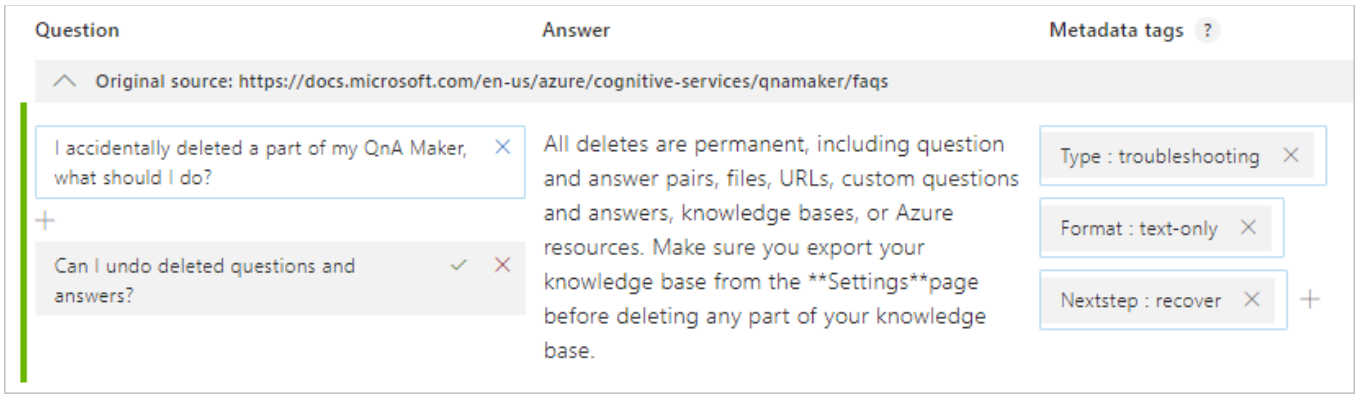


Figure 3 – Language Service – QnA Maker (Source)

This is an example of the QnA Maker that you can use to create a FAQ chatbot that can answer users' questions based on the inputs available.

Speech

The Speech services are used to detect and analyse voice-based content from the users. There are four basic services under this category.

- **Speech to Text** – This service is used to convert the audible conversation to textual data that can be read and searched. An implementation of this is voice-based typing services where you can speak, and your speech gets converted to text on the flow
- **Text to Speech** – This is the opposite of the speech-to-text service. This converts textual data into speech with a live voice. This voice has automated modulation that gives it a natural feel as if some human is reading the text
- **Speech Translation** – This service is used to translate speeches from one language to another in real-time as users are speaking. A lot of online translation applications these days make use of this feature in order to translate the voice conversations of their users
- **Speaker Recognition** – This is a new service and is still in preview mode. It can be used to identify speeches from the person and identify them accordingly

Decision

The Decision API services are used to apply machine learning algorithms to the dataset. These services help to identify data patterns and trends from within the dataset and aids in the decision-making process. You can leverage these services without any additional knowledge of how these work behind the scenes. Microsoft takes care of implementing and training the models behind the scenes and exposes the results through the API. The main services available under this category are as follows.

- **Anomaly Detector** – This is used to detect anomalies in the underlying dataset. You can identify values that should not be present within a dataset and take appropriate actions based on it

- **Content Moderator** – This API helps in monitoring social media applications and identifies offensive content like posts or videos and flags those. It is a very useful feature and is used on almost any social media platform
- **Personalizer** – The Personalizer is used to create personalized recommendations for every individual user based on their browsing activities. This is used by applications that target their sales by optimizing human interaction and behavior with them

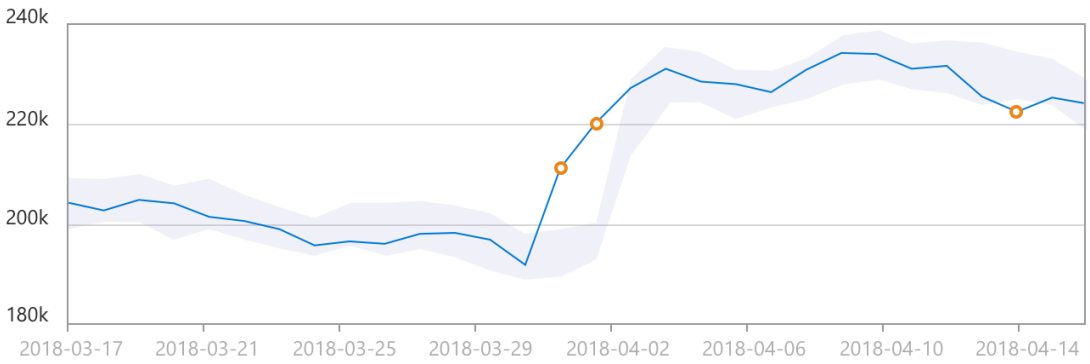


Figure 4 – Decision Services – Anomaly Detector (Source)

Web Search

The web search APIs are a collection of multiple APIs using which you can enhance your applications' searching capabilities on the internet. You can perform different types of searches like Web Search, News Search, Image Search, etc. However, moving forward, these services are going to be moved out of the Cognitive Services space to the Microsoft Bing Search APIs.

Conclusion

In this article, we have explored the Cognitive Services in Azure. There are mainly five services in this area that comes into the picture while working. ***Vision*** helps in identifying pictures and videos. You can analyze videos to identify people or objects within them. Using ***Speech***, you can enable your applications to convert speech-to-text or vice versa and implement speech translation as well. ***Language*** is another cognitive service that enables customers to understand the natural language from users and provide outputs as desired. These are mostly implemented in chatbots to understand user input. In the ***Decision*** section, we can use algorithms like Anomaly Detector or Personalizers to enable your applications to behave in real-time scenarios. Using the ***Search*** APIs, you can look for content on the web and enrich your applications accordingly. This article has mostly covered all the services in a nutshell. In my upcoming article in this series, I will cover each of the services in depth.