**NASSCOM ASSESSMENT**

**AMAZON WEB SERVICES [AWS]- CASE STUDY**

**What is AWS?**

Amazon Web Services (AWS) is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.

Amazon Web Services (AWS) is the world’s most comprehensive and broadly adopted cloud platform, offering over 175 fully featured services from data centres globally. Millions of customers — including the fastest-growing start-ups, largest enterprises, and leading government agencies — are using AWS to lower costs, become more agile, and innovate faster.

**Benefits of Amazon Web Services**

* **The largest community of customers and partners.**
* **Most secure.**
* **Fastest pace of innovation.**
* Most proven operational expertise .
* **Agility.**
* **Elasticity.**
* **Cost Savings**.
* **Deploy Globally in minutes.**

**When to Use AWS**

AWS offers something for everyone — whether you are a developer working on a hobby project or a Fortune 500 company looking to become more agile. It is the generalist of the public cloud computing market with a huge array of services available. It is often used in hybrid IT.

As the first and largest cloud provider, AWS has very mature, tested offerings. It is unlikely to go out of business anytime soon, and it is a solid choice for most cloud computing use cases.

Additionally, the company is innovating at a breathless pace, and it’s reasonable to assume that its product and solution portfolio will expand considerably in the years ahead.

**When Not to Use AWS**

If AWS has a weakness, it is its lack of offerings for hybrid cloud deployments. Analysts say that most enterprises will be pursuing a hybrid cloud, multi-cloud strategy, and Amazon’s competitors Microsoft Azure and IBM have an advantage in this area. Because many large organizations already use Microsoft and IBM products in their data centres, they naturally gravitate to these other providers for the public cloud portion of their hybrid clouds.

And the jury is still out on whether AWS will be the best option for emerging technologies like artificial intelligence, machine learning, the Internet of Things and containerized deployments. All of the leading vendors are competing heavily in these areas, and AWS will have to continue to innovate if it wants to retain its position as the market leader. In the technology industry, markets can shift very quickly, and being the number one provider today is no guarantee of future performance.

**AWS Use Cases**

Millions of customers — including the fastest-growing startups, largest enterprises, and leading government agencies — are using AWS to lower costs, become more agile, and innovate faster.

In every field, the AWS service is used. Below are some areas and some top companies use AWS.

* Aerospace (NASA, Maxar, ESA etc.)
* Gaming (MPL, FanFight, Gammation etc.)
* Education (Coursera, BYJU’s etc.)
* Telecommunication (Pinterest, Vodafone, Aircel etc.)
* Entertainment (Netflix, Hotstar etc.)
* Media (BBC, The Hindu, Punjab Kesri etc.)
* Software (Share chat, Slack etc.)

**What are the services provided by AWS?**

Each type of service in this “What is AWS” blog, is categorized under a domain, the few domains which are widely used are:

* Compute
* Storage
* Database
* Migration
* Network and Content Delivery
* Management Tools
* Security & Identity Compliance
* Messaging

**Amazon Route 53**

The name itself suggests that at the port no 53, the AWS provides the DNS services to its applications. It easily and effectively connects the EC2 instances or Amazon S3 bucket, and it also provides the routing information to the outer side of the AWS infrastructure.

This makes AWS more user friendly.

**Amazon EC2**

Provide Scalability and reusability to the computing capacity in the AWS cloud. Which makes less to hardware and more to developing and deploying applications to the cloud. Which is more helpful to the application developers who can focus to build the different applications instead of managing them to the cloud servers. Various instances for CPU, memory, network, and storages are available as per need.

**Amazon CloudFront**

Low latency and high transfer speed of 5700 Gbps for Hotstar is somehow possible through CloudFront as it provides Content Delivery Network (CDN) services. Any user can directly use the cloud front who is familiar with other services of AWS. It is already included with AWS subscription for the user.

**Amazon S3**

Storing the data and fetching them as per the need is the advantage of the AWS services.

To store, retrieve or analyze, millions of data from anywhere at any time can be possible with the AWS S3. As at the 5700 Gbps bandwidth, the Hotstar is providing the live match to the millions of India public, who are crazy for match and this has already been cracked the record to provide the live video streaming.

There are just a few names used as a service of AWS. They itself are huge research topics.Here, I have just mentioned which services are used by Hotstar and how they make Hotstar application more stable among other video streaming application.

It provides simple, but strong technical architecture for the 5700 Gbps bandwidth for Live match video streaming.

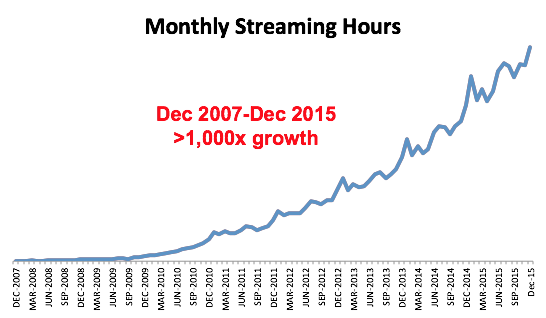
**CASE STUDY-1**

## Netflix AWS Case Study

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Netflix was originally a DVD shipping business where they would send out DVDs of your chosen programs to you. This was going well until 2008 where they experienced a major database loss and for 3 days could not ship out any DVDs to their customers. That was when the senior management at Netflix realized that they had to shift from continuous vertical scaling which leads to single points of failure to a more reliable and scalable horizontal scaling system. They chose Amazon Web Services despite having Amazon as a competitor (Amazon has their own streaming service known as Amazon Prime) because AWS provided them with the greatest scaling capabilities and the biggest set of available features. It took 7 years of migration for Netflix to shut down their last remaining data centres and move completely to the cloud.

Moving to the cloud has allowed Netflix to keep its existing members well engaged with overall viewing growing exponentially.



Netflix itself has continued to evolve rapidly by using many new features and relying on ever-growing volumes of data. Supporting this fast growth would not be possible earlier using their own in-house data centres. Netflix could not have racked the servers fast enough to support their own growth. While Cloud brings elasticity, which allows Netflix to add thousands of virtual servers and petabytes of storage within minutes which makes the whole process easier.

As of January 2016, Netflix has expanded into 130 new countries. It uses multiple AWS Cloud regions which are spread all over the world to create a better and more enjoyable streaming experience for Netflix members wherever they are.

Netflix relies on Cloud for all its scalability, computing and storage needs (not only video streaming) — Netflix business logic, distributed databases, big data processing, analytics, recommendations, transcoding and hundreds of other functions that are used by Netflix all go through their Cloud infrastructure. Netflix also has its own Content Delivery Network (CDN) known as Netflix Open Connect which is used to deliver videos globally in an efficient manner.

When Netflix was using their own data centres, they faced a lot of outages. Cloud Computing is not perfect either, even though Netflix has hit some rough patches in the cloud, a steady increase in the overall availability has been noticed. Failures are ultimately unavoidable in any large-scale distribution system, even a cloud one. However, a Cloud-based system allows you to create redundancy measures while become quite helpful. Cloud Computing has made it possible to survive failures without impacting the member experience.

Netflix did not shift to cloud for cost reduction reasons, but Netflix’s cloud costs ended up being a fraction of their cost which was a pleasant surprise. This was due to the elasticity factor of cloud computing, enabling Netflix to continuously optimize instances to grow and shrink as per requirement without the need to maintain large capacity machines. Economies of Scale helps Netflix in this scenario.

The benefits are very clear, but it still took seven years for Netflix to complete the migration. Moving to the cloud is a lot of work and a lot of factors need to be considered. Netflix could easily move all of its existing systems to AWS but bringing existing systems also brings all the problems and limitations that were present. So, Netflix took the cloud-native approach, they rebuilt all of their technology and fundamentally changed the way they operate the whole company. Netflix migrated from a single application to thousands of micro-services.

**CASE STUDY-2**

## Adobe Systems On AWS

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Adobe Systems Managed Services program delivers enterprise software such as Adobe LiveCycle Forms, Adobe Connect conferencing software, and Adobe CQ5 to Fortune 100 companies, large multi-national corporations, and government agencies. Adobe uses AWS to provide multi-terabyte operating environments for its customers. By integrating its systems with the AWS Cloud, Adobe can focus on deploying and operating its own software instead of infrastructure.

Adobe Creative Cloud Suite can now run on AWS, enabling you to unlock creativity from anywhere in the world. With the joint effort between Adobe and AWS, applications including Adobe Premiere Pro, Adobe After Effects, Adobe Photoshop, and Adobe Media Encoder are no longer bound to your local desktop. Adobe has published a white paper that gives prescriptive guidance on the planning, deployment, and use of Adobe Creative Cloud software suite on AWS.

Customers frequently ask if they can run their editing software in AWS. From these inquiries, it’s clear that patterns of use can be described in the form of distinct use cases, or what we call user personas. Some of the most common personas are News/Sports, Creative, and Promo. The goal in identifying personas is to provide enough flexibility around common use cases to allow for easy application against a variety of additional use cases, such as long and short-form productions, conformance edits, and manual quality control. Personas have different demands in terms of storage, network bandwidth, disk I/O, CPU, and memory. Naturally, there are some workflows that are a challenge in the cloud, including colour grading, colour fidelity, and multi-channel audio support. As Virtual desktop infrastructure (VDI) protocols evolve to support functionality such as 10-bit colour and more audio channels, these workflows can be enabled, and AWS has designed its templates with flexibility in mind to accommodate future feature improvements.

The Adobe/AWS white paper walks you through key decisions when designing for creative application use in the cloud, such as network setup, latency, and locality of an AWS region. It is important to note that minimizing network latency has a direct impact on workstation interactivity and that being physically closer to an AWS region provides a better user experience. Additionally, locations such as Los Angeles have dedicated [AWS Local Zones](https://aws.amazon.com/about-aws/global-infrastructure/localzones/), which reduce latency by placing AWS compute, storage, database, and other select services closer to a large population, industry, and IT centres. Finally, when operating in a production facility, studio, or creative office, [AWS Direct Connect](https://aws.amazon.com/directconnect/) enhances not only connectivity through dedicated capacity, but also adds a layer of security abstracting the public internet path. When choosing a deployment location or region, a target latency of around 30ms or less will provide an optimal experience. Higher latency may lead to a lag in peripheral device interactivity such as jog/shuttle operations, or general playback and graphical interface activities.

**CASE STUDY-3**

## Siemens on AWS

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A global leader in electrification, automation, and digitization, [Siemens](https://new.siemens.com/global/en.html) AG has driven innovation across industries for nearly 175 years. Siemens uses an array of AWS services to carry on that tradition of transformation — bringing IIOT to railways and factories, developing intelligent infrastructure for buildings and distributed energy systems, implementing AI into its cybersecurity platform, and more.

As part of its strategy of providing digital transformation solutions to realize value across the entire business and embrace Industry 4.0, Siemens built MindSphere, its open Internet of Things (IoT) operating platform hosted on AWS. Driven by automation, IoT, and cloud computing, Siemens can now solve business problems with the data that it collects, analyses, and monitors. Learn how and why Siemens built MindSphere on AWS, for its own global factories, and for its customers, in order to achieve world-class levels of manufacturing efficiency.

## ****Conclusion****

Amazon Web Services (AWS) has become the solution in today’s changing retail space. With more and more cloud computing services being offered by other competitors, AWS has dominated the market by offering affordable products that are scalable and reliable, and a fit for all types of enterprises with a wide geographical cover across the globe.

Being an all-inclusive platform offering a blend of infrastructure and amazing products such as AWS EC2, AWS S3, AWS RDS, AWS Lightsail, AWS Cloudwatch, and AWS Marketplace, AWS is no doubt a great return to your investment indeed.

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