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Cloud Architecture: Benefits and Best Practices

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Abstract

The business world has been evolving with a rapid pace due to the arrival of the forth industrial evolution and globalization. It has been comes forth a number of modern technological equipment and process which most effectively helps an enterprise to avail a higher business growth in the worldwide business surroundings. The entire data storing, accessing operation become mostly essential for the business companies to make suitable strategies and decisions to maintain the their overall operational and strategic takes as well to gain attention of the consumers through taking more consumer centric decisions. Cloud architecture is one of the most helpful aids from the technological evolution which most significantly assists to enhance the data storage and accessing process of an enterprise in the global market. The entire study has been keep its concentration on discussing the concepts, advantages and best practices involved with cloud architecture in international market. A number of qualitative data has been used within the study to come forth with most effective output result which has been gathered through taking secondary data collection method within the study. It provides the key support to understand the overall concepts, benefits and associative practices of the cloud architecture.

Keywords

Access, Cloud architecture, data, storage.

INTRODUCTION

Business enterprises in recent days have to store, fetch, and share a large amount of data and information in order to perform their entire strategic and operational task with an effective process. The overall storing of data and information becomes highly difficult to gather within a certain real time storing device. The storage operation through using practical devices becomes highly exhausting and most of the time it comes forth with a critical scenario of data loss which most negatively impacts on the operational tasks of a company in business periphery. The application of performing the entire storage operations using virtual platforms opens up the gateway to store data, texts, images and many other media files with a large storing capacity as well as provide the scope to fetch necessary data with a quicker process. Cloud computing is actually a virtual network which helps to store a large amount of data as well as its superior capacity to share and explore data with proper permissions and enhance the security of data [1]. The entire study will going to keeps it's concentration on evaluating the benefits and best practices of cloud architecture.

The entire process of cloud architecture has its superior involvement with modern days IoT devices, AI technologies which helps an individual or company to pile up numerous data and information without any real time equipment or device. The entire sharing and escorting operation of necessary data about phenomenon can be performed within a quicker time through cloud architecture. Though a large number of business organizations have already applied the use of cloud architecture to make a large stock of data using virtual space and perform their business with more security in the global business market area. The implication best practices while using cloud architecture most effectively helps an organization to deal with their essential data and files in an organized, secured way within a virtual platform. Various different concepts and theoretical knowledge which are mainly associated with cloud architecture will be analyzed with an in detailed process within this particular study. It will provide a key assistance to know proper usages of cloud architecture. Business enterprises will be able to gain the highest contribution while using cloud architecture through availing necessary insights of cloud architecture. There are versatile types included within the cloud architecture which can also be identified and discussed in an effective way within the study. It helps to understand the best practices which have been associated with the entire process of cloud architecture. The advantages which can be achieved through using the process of cloud architecture has been evaluated within the study through analysing the insights taken from various literature sources.

Aims

The study has been aimed to analyse the overall concepts of cloud architecture in order to evaluate best practices and benefits which are able to be achieved through using cloud architecture.

Objectives

- To know the impact of cloud architecture.
- To understand best practices while using cloud architecture.
- To evaluate the benefits which can be gained through using cloud architecture?

MATERIALS AND METHODS

An interpretive philosophy in time of performing a certain study provides the assistance to generate the most suited output through enabling the observation of the social

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phenomenon which helps to enhance the quality and acceptance of a certain study. In order to evaluate the concepts, best practices and benefits which are associated with cloud architecture, one need to perform through analysing the social world to gain the most effective results from the study. The process used in interpretive philosophy has its superior ability to evaluate a certain topic through exploring the social phenomenon about the topic and helps to gain proper idea for the questions and objectives which have been taken within a certain study [2]. Hence, in order to perform this particular study an interpretive philosophy has been taken within the study.

On the other hand, the entire task to evaluate the best practices and facilities which can be gained through cloud architecture needs to collect a large amount of topic oriented data and information within the study. An inductive approach helps to collect numerous topic oriented data while performing a certain study [3]. The implication of an inductive approach to collect a large set of topic related data and information most effectively helps to come forth with an effective study. Hence, an inductive approach has been taken in order to perform this particular study with an effective process. The study also demands to gather a large number of non-numeric and textual data and findings to analyze the concepts and benefits of cloud architecture with the most suited manner. The qualitative type of data is actually the non-numeric and textual data and information which helps to gain an effective understanding about a certain topic [4]. This particular study will gather a large number of qualitative types of data and information to gain an empirical idea about cloud architecture.

The secondary data collection process has been taken in order to collect a large number of qualitative data within this particular study. The secondary data collection process has provided the opportunity to explore various authentic online journals, articles from various peer reviewed sites available online [5]. This particular study has kept its concentration on gathering a large number of topics oriented and qualitative data and information from various authentic and peer reviewed sites. It mostly helps to come forth with superior output results while performing the entire study. The overall methods and materials which are used within the study have been mentioned within the discussion to provide a superior idea about the entire process and strategies which have been used in order to perform this particular study. The data and information which has been published before 2019 has been taken within the exclusion category within the entire study. On the other hand, the process of collecting data through the primary data collection process has been also taken within the exclusion category. The data and information available in the peer reviewed and authentic sites published onwards 2019 has been taken within the inclusion category for this particular study.

RESULTS

Concepts of cloud architecture

Cloud architecture is one of most significant technological inventions which enhance the storage capacity of an enterprise in the worldwide business market surroundings. The overall storing, sharing as well as the summon process of data to perform the operational tasks of an enterprise mostly enhanced through the implication of cloud architecture. Various modern tech equipment such as virtual reality, artificial intelligence, online storage facilities have been used within the entire process of developing cloud architecture. A large number of individuals all around the globe have started using cloud architecture to gain superior assistance in data storing operations. Cloud architecture is actually involved with making a superior combination of different technological components to build a cloud where resources are pooled while using virtualization technology as well as helps to share data across certain networks [6]. The entire process of cloud architecture is linked up with virtual storing platforms and provides the scope to share and collect various essential data and information in time of need through an internally connected front end platform.

The users who have the authorization to access cloud can be able to upload and fetch files through ensuring their accessibility. The entire data and information stored and accessed through cloud architecture has been made while keeping focus on superior security and encryptions which help to avoid data redundancy risk for the business companies in recent day's global business market surroundings. Cloud architecture is the process where various cloud technologies which are hardware, virtual resources, software's, virtual networks and many other associative technicalities combine or interconnect together to improve the cloud computing experience and the environment more effectively [7]. The interconnection established within the different cloud components and technicalities provide the assistance to perform cloud computing as well as enhance the opportunity to share different resources and data within versatile cloud networks. The entire process of sharing data becomes more secure and quicker through gaining the support from the cloud architecture. A number of up to the date instruments, programming languages, networking equipment, servers used in order to build highly effective cloud architecture to avail more effective cloud computing process [8]. Various kinds of hardware used within cloud architecture to make effective virtualization of the resources as well as provide the support to making cost cutting in economic scale.

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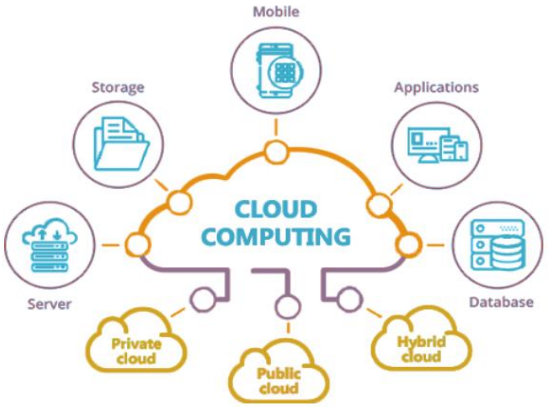

Figure 1: Cloud computing

In order to avail a higher data sharing and storage operation most of the leading business companies as well as tech geniuses have been shown their interest towards using cloud architecture in business and daily livelihood processes. In the fiscal year of 2022, more than 33% of clients using cloud architecture have shown their interest to use Amazon Web Services (AWS); whereas nearly 21% individuals have started using Microsoft Azure takes [9]. The proper application of cloud architecture mostly provides the assistance to gain a higher storage and sharing operations of resources.

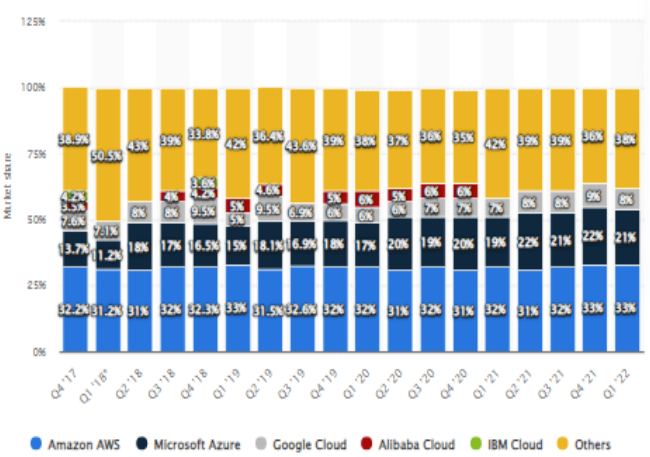

Figure 2: Cloud architecture share of different developers

The overall technical assistance and operations which have been used in cloud computing most significantly enhanced the capacity of storing and sharing resources using virtual platforms. In the fiscal year of 2021, the overall market value of cloud architecture has reached 133.6 billion U.S. dollars while it is expected to reach towards 168.6 billion U.S. dollars in 2025 [10]. It actually portrayed the increasing demand of using cloud architecture in the global business market periphery.

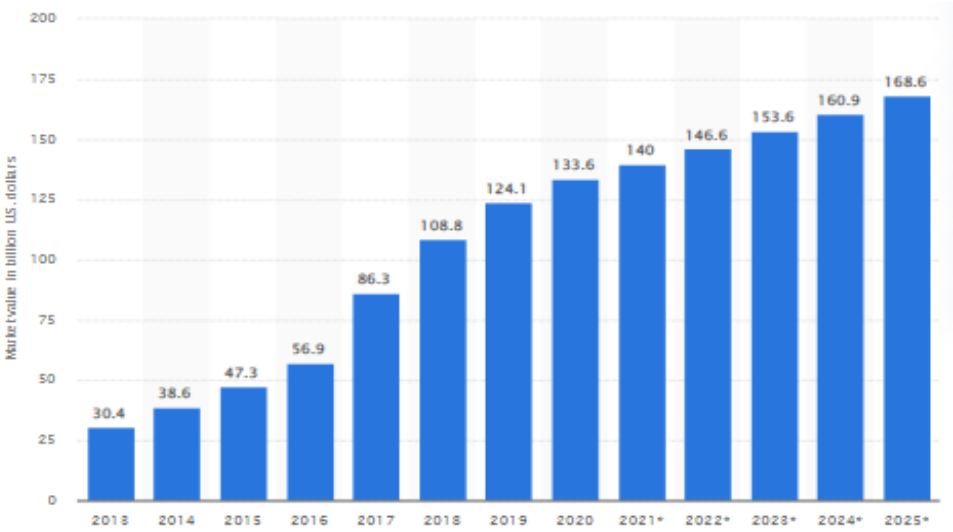

Figure 3: Market value of cloud architecture

Different types of cloud architecture

There are four basic types of cloud computing that have been used which are respectively private clouds, public clouds, hybrid clouds, and multi clouds. The concepts and ideas about these four different types of cloud architecture have been discussed below.

Private clouds architecture

Private cloud architecture is one of the most used cloud architectures in recent days on the global market periphery. In a public coding system just a singular user is able to access the storage in cloud computing. The entire process of private cloud can be defined as the model where the cloud architecture is made for a single user organization [11]. A huge number of individuals in the recent day's business surroundings have been used private cloud architecture to perform the storing and accessing resources by a singular user. It has its superior capacity to maintain the overall data privacy needs of an individual.

Public clouds architecture

Public cloud architecture is another key cloud computing infrastructure. The public cloud architecture uses an IT model

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where computing services, virtual storage operations, develop and deploy key applications to enable access to store and use data while accessing public internet servers [12]. A large number of people all around the globe have started using public cloud architecture to establish an open storing and accessing platforms for various users within a certain virtual storage system. The data sharing operation through public cloud architecture is more flexible and effective than private cloud architecture. Though, it has been involved with a higher data redundancy risk within it due to multiple access of the virtual storage through different servers.

Hybrid clouds architecture

Hybrid cloud architecture can be explained as the type of cloud architecture which basically includes best of both the private and public clouds. In short it can be said that the data will be stored in the private cloud however if required then the data can be accessible through the public clouds [13]. The best examples of the hybrid cloud are like the premises data centre and Google cloud both of them are the best example of the hybrid clouds architecture. In this the Google cloud is the better example of the public cloud likewise the Amazon, Microsoft Azure and others. Its significance can be understood as it allows third party intervention in its process unlike the private clouds. It has been divided into two types and they are the homogenous and the heterogeneous and both of them depend completely on the private as well as the public technologies of the different vendors.

Multi clouds architecture

The concept of multi cloud architecture has been used in the global industry market for the last 10 to 15 years. It is actually a combination of private and public cloud computing within a certain premises and edge to establish, operate, access virtual cloud storage with a secure way [14]. Though a large number of business companies used this particular type of cloud architecture within their working area to store and fetch data effectively.

Advantages Gain through cloud architecture

Increase Flexibility and reliability in sharing data and information

The use of cloud architecture most significantly helps to improve flexibility and reliability in the trait of sharing and storing data and information. The entire process which is actually involved with cloud architecture provides the opportunity to enhance overall security concerns which helps to avail more reliable source of storage within an enterprise. It also provides the opportunity to share data in a more easily and flexible way with authorized users and enhances the data fetching operation in necessary moments.

Improve performance and efficiency

The implication of cloud architecture within an institution provides the key assistance to increase the performance and efficiency of a company to improve the flow of information within the company. All users performing within the company can be able to access data and information through cloud storage in a more efficient way through availing the assistance from the cloud architecture within the workshop.

Reduce IT maintenance cost

The entire process of storing data and information using hardware and software devices is not only highly hectic but also involves critical maintenance cost. Business organizations have to invest a large amount of finance in order to ensure proper performance of the storage and data accessing tools to gain most desired support from the IT. The entire operation involved within cloud architecture helps to reduce the excessive cost in the trait of IT maintenance [15]. It actually increases the demand for cloud architecture in the international surroundings.

Improve backing up and restoring tasks of information's

The implication of cloud architecture involves a number of automated data restoring processes. The entire data and information of a company is most effectively backed up through the assistance of cloud architecture and helps to avoid data loss issues within the company. It most significantly provides the support to enhance the performance of the company in the global business market periphery.

Improve accessibility and security of data

The overall technological assistance which has been involved within the cloud architecture provides the opportunity to enhance the entire accessibility as well as security of the stored data and information. The users who have the permission to access the data from the data cloud can fetch information with a quicker and more flexible process. It helps to increase security of the stored data and information within the cloud storage and helps to mitigate data redundancy risks.

A large storing capacity

The entire data storing ability of cloud computing is significantly high. A business enterprise can be able to perform their entire storing operations more effectively through using proper cloud storing through the assistance of cloud architecture [16]. It is the most significant beneficiary impact which can be gained through gaining the assistance of the cloud architecture.

Best practices involved with the application of cloud architecture

Establish flexible storage option

In order to achieve the highest contribution from the cloud architecture, it is essential to keep focus on implementing a flexible storage option within it. The entire practice of developing and establishing the suitable and higher data storing capacity most significantly helps an enterprise to enhance their data storage ability and gain superior support through analysing the data. In time to develop most desired support from data architecture it is highly essential to ensure

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superior data storage capacity within the data architecture. A number of flexible and technical supports gained from the data architecture most effectively help an enterprise to enhance the data storage capacity and gain superior technological assistance while exploring virtual data storage options.

Proper risk management options to cope up with hardware failure

A business enterprise in recent day's business periphery has been facing a critical business disturbance due to various hardware failure issues as well as technological issues. The entire practice of developing preplanned risk management strategies to mitigate the disruption caused due to hardware failure provides the support to enhance the performance of the company in the worldwide market. This particular practice with cloud architecture assists business organizations to restore data from virtual storage areas and perform their business with an undisrupted manner and mitigate the negative impact of technological issues within the organization.

Implement Parallelization

The practice of parallelization provides the support to help an enterprise to gain the highest contribution from cloud architecture. Parallel cloud architecture is actually a methodical process of organizing an entire resource while maximizing the performance and programmability of the technology while costing any instance of time [17]. It most significantly helps an organization to perform their storing and accessing operation effectively while availing the support from the cloud architecture.

Implement proper security patch and security updates

The overall use of cloud computing and cloud architecture has been involved with a high rate of cyber crime risks which actually escalate the risk of data redundancy in business periphery. In order to avoid the increasing threat of cybercrime and associative data redundancy risk, it becomes highly essential to ensure proper data security and security support while availing cloud architecture. The process of developing proper security patches and updates provides the support to enhance the performance of the company and avoid disruption caused by data loss.

DISCUSSION

Cloud architecture is actually a process which helps to make a uniform and connected infrastructure with the virtual storage area of a company and provides the opportunity for the company to access and share these data effectively. The entire process of cloud architecture has involved itself with various modern days machine learning, programming, virtual reality, artificial intelligence, cloud computing and many other associative technologies which helps to manage and secure data efficiently for a business organization in the global market. There a number of different types of cloud architecture have been used with versatile specification to fulfil different needs. The basic four types of cloud architecture have been analyzed and defined with a detailed effort within the entire study. The types which are involved with cloud architecture are respectively public cloud architecture, private cloud architecture, hybrid cloud architecture and multi cloud architecture.

Public cloud architecture is the multiple numbers of authorized individuals able to access data from cloud storage whereas in public cloud architecture singular users are able to access data from virtual storage as discussed within the study. The process of hybrid cloud architecture is a perfect combination of public and private architecture where a singular user stores data and various public users are able to access data with proper authorization process in time of need. The concept of multi cloud architecture is also discussed within the study. In this architecture, data can be operated, managed and accessed with superior security. Though, it is one of the most popular cloud architectures used in recent days business surroundings. The entire advantages which can be avail through cloud architecture are also mentioned within the study.

The study has come forth with the output results that the entire data storage and access scope increased through using cloud architecture within an enterprise. It has been found that the overall use of cloud architecture helps to increase the flexibility and reliability of the data and enhance the performance of the company in the international market. The overall IT maintenance cost also reduced while availing the assistance of the cloud architecture. The automated restoring option to backing up data to avoid data loss is also offered by the cloud architecture with large storage capacity which is one of the key beneficiary sides of cloud architecture. The most essential practices in cloud architecture such as implementing parallelization, proper security patch and frequent updates, flexible storage and large storing capacity have been identified within the study. Through, keep focus on above mentioned factors a business company can be able to achieve most desired performance and support from the cloud architecture and gain higher business position in the global market.

CONCLUSION

The overall demand of the data has been increasing in the global market at a rapid rate. Business organizations have to keep their focus on accessing the consumer oriented data to enhance their product designing and marketing approach through taking more consumer centric decisions within the business periphery. On the other hand, the overall process of gathering information about the resource updates has become highly necessary in order to take the most suited strategies according to the capacity of the enterprise. A large number of business individuals have come forth with the steps towards implementing cloud architecture in order to store a large amount of data in virtual storage platforms and access those data in time of need through assistance of the cloud architecture. The use of various IoT devices within the

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working surroundings provides the support towards storing a large amount of data and accessing those in demand.

The overall process of keeping updates of the records and data through ink and paper has become mostly absolute in the last few years. The arrival of forth industry evolution has come forth with various modern technicalities in the business market to enhance the performance of an enterprise; cloud architecture is one of the greatest boon avail through the technological evolution through industry 4.0. The entire study has kept its focus on evaluating the entire concepts involved within cloud architecture, analyzing the beneficiary sites that can be explored through cloud architecture and to discuss best practices using cloud architecture. Various insights through analyzing the textual qualitative type of data gathered through the secondary data collection process have been taken as a key literature source within the entire study. It has helped to obtain an empirical idea about cloud architecture and its advantages. It also helps to understand the best practices which help to gain an apex contribution from the cloud architecture and gain a higher business growth through storing and accessing data as per the conditions and needs of the company.

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