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Fundamentals of Designing and Building Cloud Environments

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Abstract

This following study is based on the fundamentals of designing and building cloud environments and all types of valid data has been collected to evaluate study in a proper manner. At the beginning of the study, an introduction of the cloud environment has been depicted in proper manner and in this section; the concept has been clarified by collecting valid and reliable sources. Also, several types of data have been gathered which are related with the use of cloud environments in IoT devices and several types of business organizations. The data which has been collected for this study is secondary by nature and the data has been collected by following a qualitative approach. Also inductive research design has been followed in this following study. For this following study, three themes have been developed and first theme is based on the concept of the cloud environment and then the importance of cloud environment in IoT devices and business organizations have been showcased in a proper manner. Also, the use of cloud computing has been discussed with elaboration and the fundamentals of designing and building cloud environments has been depicted with valid insights.

Keywords

Cloud environment, cloud computing, IoT devices, business organization.

INTRODUCTION

Cloud environment has been used in IoT devices in a major way and cloud environment is an important feature which must be developed in each and every IoT device in the present situation. Majorly, in a cloud environment, customers can be able to deploy and conduct their software applications on such infrastructure which would be sophisticated and which would be owned and regulated by a cloud provider such as Google cloud platform, Microsoft azure, amazon web services etc [1]. Cloud environments can be implemented as the sources of cost reductions and one of the greatest cost savings is the inclusion from capital expense to optional expense as well. While developing the traditional environment, the infrastructure and equipment have to be purchased for the future. This equipment for cloud environments have been generally purchased as the segments as the capital budget of a firm. Basically, it is immensely less hectic to get operational costs accepted than to gain approved capital expenses.

In cloud environments, one of the most prevalent and initial issues for firms in illustrating strategies is compliance which has been provided as the physical and virtual infrastructure of the cloud can be trusted easily. Specifically when those infrastructure elements are owned and regulated by external services providers, the physical and virtual of the clouds can be trusted [2]. For several business functions, majorly run within cloud, conducting websites and web oriented wikis, for example- it is often enough to have a cloud provider vouch for the security of the underlying infrastructure. Also, for critical business processes and sensitive data, however, the attestation of their party generally is not sufficient. Additionally, traditional cloud environments have been constructed by implementing utility storage and utility computation and these are basically more cost effective than specialized elements. It can be stated that the use of cloud environments can be used as retaining all the crucial files with an unencrypted manner.

MATERIALS AND METHODS

As this study is based on the fundamentals of building and designing cloud environments and in this study, some crucial factors have been maintained and implemented to provide the depth of the subject matter. This study has been filled with several insights which are related directly with the following topic and all types of data have been collected from authentic sources which are related with the impact of cloud computing in a certain manner. Also, all the insights are based on these topics which are capable of serving the importance of cloud computing in several kinds of IoT devices. Furthermore, the designing and building process of the cloud environment has been depicted with the help of gathering proper insights.

For the following study, the secondary data has been collected and implemented to bring proper type of execution to the study and all the sensory data are closely related with this topic of the study. Later on, the secondary data has been collected by following an inductive method that is actually appropriate to the subject matter. An inductive method has been generally chosen to execute the secondary data and therefore, this method has been followed within this study. Furthermore, in this following study, the qualitative research design has been selected and used to depict the depth of the subject matter.

The reason behind choosing qualitative research design is based on the type of data that has been gathered for this research work and to execute more than one factor at the

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same time, this research design has been selected. As secondary data has been collected, the research type is secondary for this research work. There is another criteria which has been followed in this study and it is the inclusion and exclusion criteria for this research work. For this following study, the primary data has been excluded and secondary data has been included to provide proper type of execution to the study. Lastly, the reason for choosing this subject matter as the core topic is to showcase the concept and usages of cloud computing in every aspect of a business.

RESULTS

Theme 1 Concept of cloud environments

Cloud environment intends to depict a shared pool of computing resources which are configurable in a certain manner and which can be used as storage, servers, applications and services in several types of IoT devices. Also, cloud environments describe a bunch of systems and producers maintaining and acting together to give services in such a manner that are actually not connected with the underlying hardware or software which have been implemented for a certain reason [3]. There is a type of conflict between the microstrategy cloud environment service and the cloud platform license which are known as microstrategy cloud environments service terms.

Generally, there are four types of cloud environments which have been used in uncountable IoT devices. The types are as follows- private clouds, public clouds, hybrid clouds and multi clouds. Also, there are three types of cloud computing services which have been used extensively and the parts are as follows- platform as a service, infrastructure as a service and software as a service [4]. Furthermore, the clouds environment guides to two various types of clouds which are globally recognized as private and public clouds. The public cloud environments are those that give IT services to any consumers with the help of the internet and on the other hand, private clouds give IT services to a preoccupied bunch of customers with the access via the internet or through private networks.

Cloud environments implement remote servers to save and occupy the valid data like, files, business related data, videos or JPG files. Users upload data to the servers through a web connection where it has been retained in a virtual machine or in a physical server. Generally, cloud intends to entail an extended list of instruments and strategies but the major traits of cloud computing remain the same. In present situations, cloud computing expands from infrastructure to software as a service models and everything involving artificial intelligence, containers, server less commuting, different types of databases, IoT, analytics, business applications and dedicated networking [5]. These following subsets have their own advantages and issues but many major features of cloud computing have been underpinned by all of them. Thus, there are several types of traits which can be explained by several users of cloud computing. As the first trait of the cloud environment, the non-demand self-service has been counted in an extensive manner.

On demand self-service is one of the common traits of cloud computing or cloud environments which can be considered as the primary characteristic of a cloud environment in an effective manner. For example, AWS, Google cloud, Microsoft azure and other types of public cloud platforms create resources that are available to the users at the click of a button or API call. With the help of data centres across the globe, these vendors consist of a vast amount of computational and storage assets within a quick and ready order [6]. This particular aspect portrays a radical departure for IT teams which are relatable and closely connected to on-premises procurement procedures that can take months to execute. There is another trait of cloud environment which is the resource pooling and it has been regulated majorly by the public cloud providers. Public cloud providers are dependent on several tenant architectures to regulate more users at the same time. Therefore, this is the concept of cloud environments which have been used majorly by deploying the characteristics of cloud computing and act accordingly.

Theme 2 Importance of using cloud environment

Cloud environments or cloud computing provide a business more flexibility and visibility in the existing marketplace and increase market recognition of that company in a certain manner. An individual can rapidly range the required resources and storage to meet the requirements of a business without having to invest in physical infrastructure. Also, the companies do not require to purchase or construct the infrastructure required to support their highest load levels [7]. Also, the cloud infrastructure intends to support environmental productivity, powering virtual services rather than physical products and hardware and mitigating the paper beats, developing efficiency of energy resources and reducing computer oriented emission can occur in a more successive manner.

Later on, cloud computing has been ranged around for approximately two decades and from data pointing to business effectiveness, cost advantages and competitive advantages it retains a big part of a business group that regulates without it in a continuous process. Most of the businesses are implementing cloud environments technology in one capability and decide to use cloud computing solutions at some crucial points. In the same aspects, the companies that invest in big data, mobility, cloud and security, can be able to get faster experiences than other competitors in the existing marketplace [8]. In addition, cloud computing or environment is a term that has achieved a large range of implementation over the last few years. With an extended increment in the implementation of data that has accompanied with Al transition of social inclusion in the present era of the digital world.

There are some leaders who remained hesitant about committing to cloud environments or cloud computing solutions for their organizations. Thus, there are several types of advantages of using cloud environments or cloud

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computing in a business and benefits are as follows-

Cost effective

In case a business owner is worried about the price tag that would come with creating a switch to cloud computing, that owner is not alone because most of the companies are aware about the primary cost of using a cloud based server. In case those who are trying to measure the benefits and issues of implementing the cloud, it is needed to consider several aspects than just primary prices they actually to considers ROI [9]. Once an individual on the cloud, ways to get entered to the firms' data would save time and money within project start up. For those who are actually thinking about that they will execute the process for paying for those features neither wanted nor needed and most of the cloud environment services are paid as per the demand of the business owner.

Security protocols

Several types of firms have a variety of security awareness while the process has comes to adopting a cloud computing or cloud environment solution. After all these aspects, files, programs and other types of data are not retained in a secured form. For one thing, a cloud intends to conduct full time jobs which are actually observed security and which is particularly more effective than conventional in house systems [10]. By implementing encrypted protocols, insights are less accessible by the threat or anyone who is not authorized to view the data.

Flexibility

A business consists of only a limited amount of attention segmented among all of its responsibilities. In case an existing IT solutions are making force to be able to commit too much of a business attention to computer and data storage problems, then a business is not going to be able to focus on fetching business objectives and satisfy the customers in an effective manner.

Insights

In the era of technology implementation and digitalization, it is becoming clearer that the ancient concept of computational forces is that knowledge is power and it has occupied more modern and adequate forms in an impactful manner [11]. Hidden within several bits of data that have surrounded by the consumer transaction are considered as the nuggets of invaluable, actionable insights of a business process. Also, several storages of cloud based solutions give extended cloud analytics for exponential views of the data.

Mobility

A cloud environment intends to give a permit to mobile access to the corporate data through smartphones and devices which accept over several smartphones which have been implemented across the globe. Employees with hectic schedules or who have lived a prolonged way away from the corporate office can implement the features to retain instantly up to date with clients and co-workers.

Enhanced collaboration

In case a business consists of two employees or more, then a highness owner should be creating collaboration with an effective prioritization. After all these aspects, there is not much point to having a team in case it is unable to perform like a team does [12]. Cloud environments create collaborative features to make a process simpler and team members can observe and share insights easily and protectively over a cloud based platform. Some cloud based services even give collaborative social spaces to get related with the staff over the firm and thus enhancing interest and involvement within the organization.

Quality regulation

There are some things which work as a determinants to the success of a business as fragmented quality and disrupted positioning within a business. In cloud environment systems, all files are retained in one place and within a single format. With everyone accessing the same insights, a business owner can be able to maintain the consistency within data, to ignore human mistakes and have a clear record of any kinds of observations or updates. Consequently regulating all types of insights in silos can guide the employees accidentally saving various versions of files which lead to difficult, confusing and diluted data.

Disaster recovery

One of the major aspects that give to the entry of a business is regulation or control over the business. Successive business control can be controlled with the contribution of disaster recovery. One of the factors that can maintain better cloud computing technology is controlled with the complete management of recent trends of the market. Business can maintain at the time of lost productivity, revenue growth, and brand reputation. The downtime of the market can get less effective and this can be anticipated with cloud based technology.

Loss protection

In case a firm is not investing within a cloud environments solution, then all of the business valuable data which is inseparable is tied to the offices desktops in a certain manner. This is more basic issues than an individual business owner who ends up permanently losing all the data in an adverse manner. In case a business owner is on the cloud, that individual is at risk of losing all the insights that have been needed by the owner and can be increased in a certain manner. It can be rather stated that cloud computing or environments can be used as the key player of loss protection.

Sustainability

In the present state of environment, it is not sufficient for a firm to place a recyclable bin within the break room and claim that the firm is doing the possibilities to help the planet in a more superior way. Authentic sustainability needs solutions that denote wastefulness at every stage of a business [13]. By conducting over the cloud is more preferable for the

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mature and it causes less rate of carbon footprint.

Competitive advantages

When the cloud environment or computing has been increasing with recognition, there are still those who are eager to retain everything within a regional aspect. That is the choice but making place for the process of cloud computing at a different disadvantageous phase when competing with these firms which has the advantages of the cloud.

Figure 1: Business outcomes of effective cloud initiative

By using cloud environments in an organization, there are 69% benefits which turn out to be the benefits of a company in a successive way. On the other hand, expansions within new industries and improved customer experiences have increased the use of cloud environments by the rate of 76% and 74% [14]. Also, the benefits of investors for the use of cloud computing has been increased by different phases of business organization and the phases are as follows- expanded services and product portfolio, crested new streams of revenue, enhanced present revenue and reduced operational costs. The rate of optimizers for the use of cloud computing has been increased by the rate of 60%, 59% and 58% in various types of phases of optimizers.

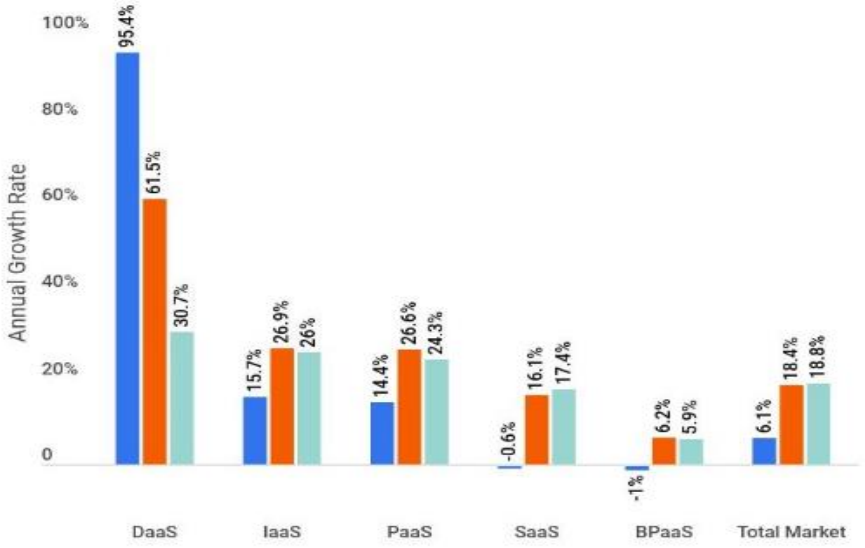

Figure 2: Annual growth rate of public cloud environment services

In the year of 2021, spending over cloud environments has been enhanced by the rate of 35.3% and it has increased over the years till date. In the year of 2020, the net spend over cloud computing was $191.7 billion [15]. The trends of using cloud environments in different types of IoT devices exceed, the amount of spending on cloud computing is $200 billion by the end year of 2022.

Theme 3 Fundamentals of designing and building cloud environments

The cloud computing or cloud environment architecture

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has been crafted in such a way that it can be able to solve any sorts of latency problems and develop the need of data processing in a certain manner. Also, it helps to mitigate IT regulated cost and provides effective accessibility to access data and digital; instruments [16]. With the help of designing and building cloud environments, it becomes easier to range up and range down the cloud resources in an effective manner. There are also some basic fundamentals which can be denoted by the use of cloud environments and fundamentals are as follows- storage, compute, database, networking and security.

Instead of observing and provisioning the server and effectiveness of the connection within a local data centre, a business owner can be able to outsource the computing power which has been required by the servers from a particular cluster of virtual machines within the cloud environment. Whereas the major benefits of storing and maintaining the data within the cloud is a convenient way of enhancing the storage capability without regulating and purchasing more regional hard drives [17]. Also, the database is a type of system that retains and regulates structured and unstructured insights with the help of implementing cloud environments within the business organization.

Furthermore, the cloud is an extended ecosystem of computing devices that helps to connect and extend the networks with each other to provide a service to the consumers. Cloud environments services providers assure that they always regulate and retain the network's authentication and connection within the infrastructure to support the needs of the end users. Also, an individual can be able to give global links and bonds to provide the application all over the globe. In the cloud, data has been retained in a protected from within a remote data centre [18]. This describes that attacks and threats such as theft and data breach have been often going to happen. As a cloud environment a user, it is the responsibility to manage the data by maintaining a top most priority. Also, the cloud has fixed up all kinds of tools to help a user with enforcement of effective security protocols within the IoT devices.

These are the basic fundamentals of designing and building up cloud environments within a business and thus, it can be able to depict the importance of using cloud computing within a business organization or any sorts of IoT devices in a more effective manner.

DISCUSSION

The study is based on the fundamentals of designing and building cloud environments and the study has been evaluated and finished with the help of such data which related and represented the authentic insights for maintaining cloud environments within a business program. Based on several insights and data which are related to the cloud environments and cloud computing, crucial themes have been constructed to flaunt the intensity of the subject matter. three major themes have been constructed which have been developed based on the importance of cloud environment and cloud computing in a successive manner and all of the themes have been developed by consisting crucial topic related insights. The first theme is based on the concept of cloud environment and the theme has been showcased in business organization and IoT devices.

The concept of cloud environments has been discussed elaborately in the study and also, several types of formats of using cloud environments to increase the rate of storage has been illustrated in this section. Furthermore, the second theme has been developed on the importance of using cloud environments and within this theme, different kinds of importance have been showcased in an illustrative manner. The importance of cloud computing has been depicted as a cost effective factor which has been used in several types of IoT devices or business models. Also, the cloud environment can be used as the factor of disaster recovery which is a huge part of a business organization. The last theme is based on the fundamentals of designing and bundling cloud environments which is majorly used as a key player to maintain and increase the rate of storage in IoT devices.

CONCLUSION

In the following study, the subject matter is based on the fundamentals of designing and building cloud environments and this study is filled with authentic sources and real context which are related with cloud environments and its importance. With the help of this study, several types of usages of cloud environments have been served which are immensely important to understand the basic needs of an IoT device and business organization which contains data which is supposed to be encrypted. Also, by using cloud environments, a particular business organization can be able to get competitive advantages and retain the data while maintaining priority within the business in an effective manner. Also, there are several fundamentals which have been depicted for the use of cloud design and building in a certain manner with the help of valid insights. With the help of highlighting the fundamentals, the actual importance of the cloud environment has been showcased within this study. Through collecting secondary data, the importance of the cloud environment has been served within a proper manner.

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