Cloud Computing: State-of-the-Art and Future Prospects for Information Systems

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ABSTRACT

Cloud computing is the computing services that are delivered to user without the need of physical hardware such as extra storage, ram, database, software and etc.

There are many issues that are caused by physical hardware's such as damage, electrical shutdown, faults that can occur within the hardware and hackers' threats that can destroy the data and incur losses for individual or an organization that can be psychologically or physically harmful like asking for bribe.

The aim of the research is to study the advantages of cloud computing and how it made improvements in information systems.

The method the cloud used in the research is by comparing the time pre cloud computing and the changes after the cloud computing.

The cloud revolutionized information systems by saving the data in a secure place and providing different services to the user.

The research will increase the awareness of cloud computing for information systems.

Introduction

What Is Cloud Computing and Its Benefits On Information Systems

Cloud computing is a virtual servers or an utility computing that has a variety of service types such as software as a service which provides all the software's that are needed without installing it or pay for each software alone such as Microsoft office 365 also platform as a service which will provide the best environment platform such as Akamai edge that is used to deploy web applications by organizations then they use it to analyze and monitor it further more there is also infostructure as a service which provides the necessary infostructures whether they are hardware or software to the user such as storage, ram, database and etc.(Knorr & Gruman, 2008)(Lewis, 2010)

Cloud computing made a significant impact on information systems such as in security and in dealing with data had become more efficient for the user and uses less effort than the past when the individuals and organizations had to set everything by themselves for A to Z which take more effort and time consuming also income consuming when they need to call a professionals to set things that can't be set by them such as hardware or some software and services that is why especially for SME's nowadays they need to use the cloud computing to boost the production and to have a high security store of data and the outstanding capabilities that cloud computing provides such as resource virtualization that will save so much money on physical parts moreover location independence, Elasticity, scalability, measuring and monitoring service.(Cunha et al., 2017)

Literature Review

Big data is an essential part in information systems nowadays because the data are extending so the analyzing of it in a deep derive business perception which is called a big data. Big data had improved the information systems by using it to identify the gap in the market so that the organizations know what to provide to the customer because of that the business will gain more income, clever decisions, efficient, fast services and customer satisfaction.

After knowing what is big data and its relationship with the information systems we can guess it's relationship with cloud computing such as creating applications with rich contexts, use artificial intelligence and transforming the data to provide a helpful knowledge also a multiple clouds data store that is server-less, extremely scalable, and affordable as well as optimized for agility in business. Big data also has four main characteristics that will increase the efficiency in information systems which will add more features in cloud computing such as volume that can store your organization many and variety of data which can be files in numerous formats such as mp4, mp3, jpg, PNG, pdf, gif and etc. Furthermore velocity which means the speed to retrieve and process the data moreover variability is the change of data that occur constantly which means that the user must be focused when dealing with data.(Shweta Iyer, 2016)(Google Cloud, 2007)(Google Cloud, 2007)

Some of the challenges that can occur for organizations that use cloud computing is the lake of full control which is annoying for some organizations and might feel to them unsafe also the shared communication infrastructure which allow the hackers to have a gap in accessing the organization by sharing network components as well as security misconfigurations like installing an outsource software inside the cloud environment that if the security is misconfigured it will cause a huge issues like viruses inside the cloud environment or data stealing and corruption that is why the configuration must be checked not in the cloud infrastructure development only but also in operations and deployment phase. Mobile phones are like computers and can be vulnerable to virus or trojan horse that leak data to external sources and will harm when the mobile phone enters through the cloud computing environment.

That is why some organizations prefer self-reliance in providing it's needs whether it's hardware or software or other things because it will gain the full control of those things but it will cost so much from buying the stuffs to hiring a professional workers that know how to install and use them and they will have a high salary that only big organizations can afford so instead of the previous process that is non affordable for small and many medium organization they can use the cloud computing with more careful for example before linking the staff devices they must be first checked by an anti-virus to know if it is safe to link or not then check the security configuration of the cloud.(Ali et al., 2015)

For mobile phones there is many challenges in using cloud computing service such as restricted power because mobiles are known of draining charge so it is very hard for users to keep the device working for long hours and unguaranteed security like personal data can be stolen and we know that most of the time mobile phone occur a sensitive data also limited capabilities when you have a large projects you will need a large storage and fast processing ram which is still not reached. Big data can be managed and analyzed by cloud computing service but it will be expensive also for health center instead of putting so many services in the hospital for storing patient profiles, staff profiles and others some hospitals moved to the cloud computing service which will decrease so much efforts to provide a room, services and a database administrator also cloud computing service provide an auto backup so when there is any problem occurred to the database there is a backup in the cloud computing service that will help furthermore the cloud services are in different regions in the world as a result of that if we imagined that our cloud service we are using is located in Singapore then when some issues happened there and we can't retrieve data or the data is corrupted the cloud service will take the backup from the service that is available in India so individuals or organization will return his data fully without any issues.

The especial things about cloud computing services that adds to information systems customers that is the price is so flexible like for example customers can pay for their hours and storage of use or they can pay by a specific plan whether it is monthly or yearly and this payment service will attract many customer's to cloud computing plus the competition between the great tech companies to provide the prices and to develop their services to customer such as

Google Cloud, Microsoft Azure, amazon web services, IBM Cloud, Oracle Cloud, Alibaba Cloud, Salesforce, Verizon cloud, VMware, Red Hat and etc.(Deng et al., 2016)(Yang et al., 2017)(Apoorva Bellapu, 2023)

Methodolgy

In order to gain more knowledge about cloud computing and its relationship with system information's I searched for a related articles and case studies so that I get some insights then I explained the effects, challenges and opportunities regarding the matter like how the cloud computing affects mobile phones and does the mobile phone have the capabilities to serve in projects and the difference in challenges and opportunities between computer and mobile phone also how to find the suitable solutions for the Varity of issues that can occur at any time or phase.

Big data also in the present time has a big role in cloud computing and its effect on information systems that is why I added it in the research for its rules in managing and analyzing the data that can cause a significant impact on the growth of the organizations by identifying the gap that is available then use it on your own interest to fill it and gain more customer's which will reflect in the organization as all by having a good reputation, increasing in cooperations with other organizations and become internationally known and dealt with.(Berisha et al., 2022)

Results and Conclusion

Overall there is a numerous of advantages and disadvantages of the cloud computing that the user can get but also we must have the awareness of using the technology because it can be a double-edged sword like in the security misconfiguration part if there is any mistake with the configuration it can cause a great issues regarding the security part that is why it's good to use cloud computing especially for the small and medium companies but at the same time they must be aware of its disadvantages and have the best solutions to fix it completely or at least decrease its problems.

It's good to provide workshops for the staff regarding the matter so they can avoid doing the mistakes and save the budget by using what is available in the cloud computing especially if it's not for a repeated projects buying hardware, software and etc will be a waste of money so since the individual or the organization needs them for a specific job it's better to do it in an economical way also the customer must compare between cloud computing service providers for the best price and services.

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