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Cloud Computing and Impact of Covid-19 on it

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Abstract – *What is cloud computing. Not all people know about cloud although they use it on regular basis. Cloud is basically shared computer resources and simplest example of this is google drive storage. During the outbreak of Covid-19 many changes have been occurred in our society. But majorly effected sector is information technology not negatively though, but it has its down side also. In IT sector also there is one technology that rises above all is CLOUD COMPUTING. During this pandemic situation, companies and institutions have instructed their employees to work from home as a precautionary measure to reduce the risk of contagion. Though amidst of pandemic all work has to be taken to work from home and through out this changing in work culture clod computing played an important role. But also, it has its downside to it such as data security.*

This paper will focus on how pandemic effected in the rise of cloud computing and what possibly the future holds in this stream.

Key Words: Cloud computing, COVID-19, crisis, rise in cloud usage

1. WHAT IS CLOUD COMPUTING

Cloud computing is providing various different services over the internet to the user on use per policy. It enables the user to have on demand network access to shared computing resources such as managing, storing and processing data through internet. It provides services such as (SaaS) means software as a service, (PaaS) means platform as a service, (IaaS) means infrastructure as a service. To understand cloud in easiest way lets take example: let's say you want to store 5gb of data, now you have two options to store your data either to store it on physical memory card and other is to store it on google drive which cloud based storage webservice. If you store it on memory card you have to carry it every time you need it but if you store it on google drive you can access it on any system throughout anywhere you want via the internet.

1.1 Features of cloud computing

1) **Pay per use**: You only have to pay for what you are using or want. To get a single service you don't have to pay for entire package of services.

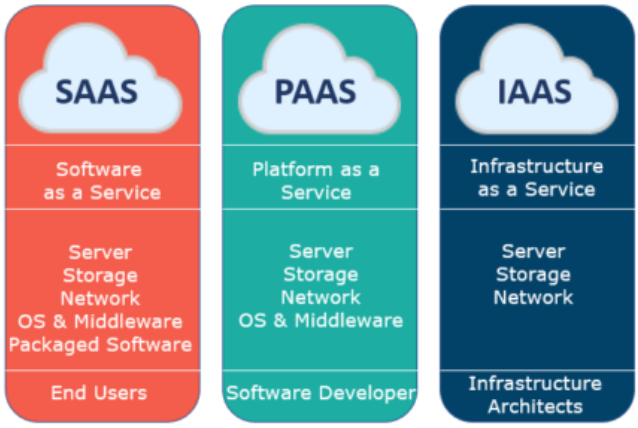
2) **Availability**: You can access the service anytime, anywhere. Services are also platform independent all you need is any internet browser and you are good to go.

3) **Elasticity:** Cloud customers can easily scale their use of resources up or down as their need's changes.

4) **No upfront commitment:** They can easily unsubscribe the services if they find it unsatisfactory.

5) **Minimum pricing model:** It is economical for small scale industries because of low pricing.

1.2 Types of services



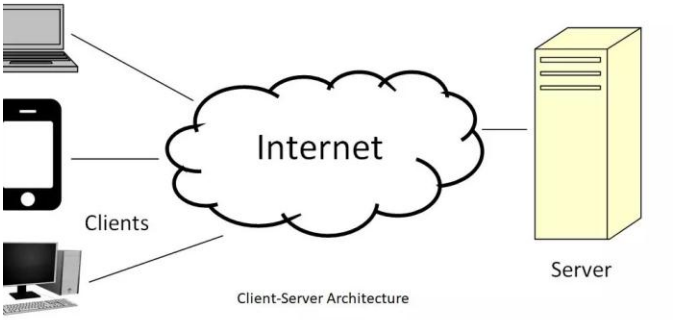
1) **Software as a service**: This offers pay per use of software applications in the form of web service unlike licensed based application which we have to buy and then install the software on our system which consumes storage as well as it also effects processing speed of the computer. It is available to multiple end users and the resources are managed by vendor. Some of example of software as a service are Microsoft 365, Open stack, Amazon web services, Facebook, Dropbox.

2) **Platform as a service:** PaaS is beneficial mostly for developers as it provides platform for developing software. No need for developers to worry about building and maintaining infrastructure.

3) **Infrastructure as a service:** This offers computing architecture and infrastructure meaning it offers computing resources such as server, storage, network but in virtual environment so that multiple users can access them.

2. Client/server architecture

Cloud computing architecture consist of client and server which are connected to each other through internet. Client meaning any end user who are using services of cloud. It consists of client infrastructure which is physical computer client is using. Servers are hosting system which are also data centers which process the data requested by the client. It manages storage, virtual machines, traffic control mechanism to handle the immense request from the end users and prevent server form overloading and maintaining the smoothly working of services. When client requires any services, he raise a request which is accepted by the server it processes the request and generate a proper to it and send it back to the client.



Client-Server Architecture

3. Cloud computing during Covid-19 crisis

Year 2020 was horrendous year as humanity suffered from novel corona virus it shook the world so hard that it is stated that it might take as long as 5 years to recover from it as there would be a possible economic recession. As it stands no one can accurately predict the future. But during the lockdown amidst of pandemic we were suddenly introduced to "work form home" and this switch is possible because of information technology more specifically we were able to work with such efficiency from remote location is only possible because of "CLOUD COMPUTING" as it provides renting as well buying option so that any organization can switch their working environment on cloud. It is scalable, flexible, exceptional user experience. It also provides reliable security, safety and compliance.

This transition form working in office to working from home was so instant that no every organization was able to follow-through and had faced a lot of loss which also led to many companies to shut their business which also adversely effected on employees as they loss their jobs where for some high-end companies this transition was smooth as they have that much capital, they were able to provide their employees everything they need making them to not fluctuate in their performance. But still this all was possible but cloud was one of unsung hero in this. Where cloud computing has been more than a facilitator, it has become a vital enabler to avoid service disruption. Cloud computing has impacted the actual provision of service in an environment of massive market volatility. Cloud uses internet to transform data from place to place it only requires one condition that is browser which makes it independent of platform rather than virtual private network (VPN) which is dependent on platform and can sabotage connectivity if not scaled properly because if you put a server of limit 100 only 100 users can connect to if it exceeds its limit there is chance that server will overload and stop working. Many chose vpn over cloud just for security but now cloud also provide same level of data encryption.

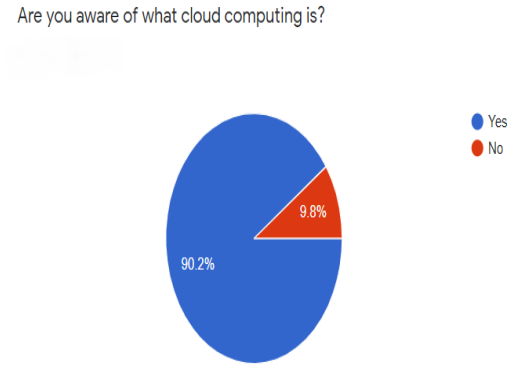
But not just this it goes other way around also as not only users benefited but cloud itself benefited from the pandemic as it got exposure greater than ever and this directly effected on hiring and need of cloud architects and cloud engineers.

Many big tech companies like amazon, Microsoft are investing hugely on cloud they are adding jobs also in order to keep up with the demands they are creating over 1000 job opportunities in Ireland and open a new Dublin campus.

Wedbush analyst dan expects one trillion dollars investment in cloud computing in the coming decade. Microsoft's azure is also not behind the race as Microsoft azure cloud computing saw revenue rise of 47% in the quarter end of June 30 ,2000 and the company say it is going to continue on investing in cloud significantly in cloud data centers

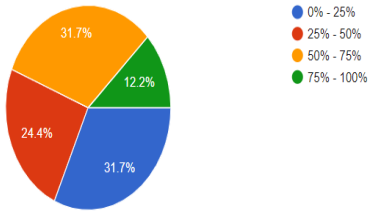
Survey regarding Cloud computing

This survey is conducted by me on few people about regarding some general information of cloud computing and what know about it.



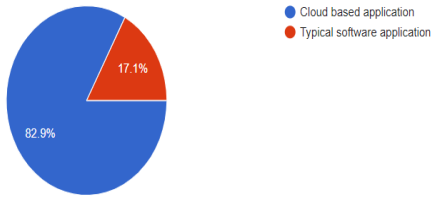
As you can see above almost 90% of at least know or have basic idea about what cloud computing is.

How much your daily work is based on cloud during this pandemic ?(Student or working individual)



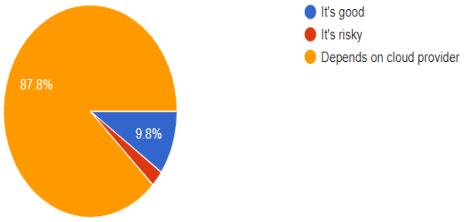
This question was intended to know about how much people used cloud for their work, education and many other things which they used to do during lockdown because of pandemic. And this are not just IT peoples who took this survey but also non-IT professionals and I tried to pick people from various different professional background. And according to graph it is clear that cloud is used for many purposes also. But still is not fully equipped or developed because almost 31.7% are saying they use cloud only 0% to 25%. And only 12.2% people are using 75% to 100% and my guess is this people are IT professional.

Cloud based application or Typical computer application which you install and use. which will be preferable in future?



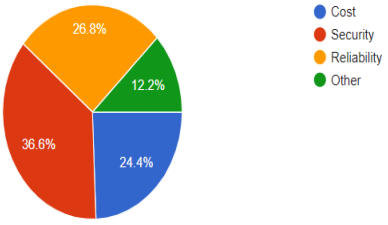
As you can see in above graph that in ratio above 80% people know what values cloud holds in future as we know typical licensed base software applications consumes more processing power as well as storage and is not flexible and needs their own platform to perform the task whereas cloud is exactly opposite of this where we only need internet and browser to do the tasks which also reduce the processing power. But 17.1% relies on licensed software application because obviously this software has long history and contribution to how we see computing and technology today thus people still rely on them.

What do you think about data security and privacy in cloud based environment?



This is one of most concerning question regarding cloud computing is it safe or not whether your data is secure on not. It differs in cloud types as cloud is mainly of three types that is public cloud services which can be used by user by renting it and thus is has some security flaws also. Secondly private cloud services which is mostly used in office and organization where they set up their servers and deploy their cloud services that is why is has major advantage in data security as they set up their servers on there own security standards. And third one is hybrid which is combination of public and private cloud and takes good features of both this is also quite secure. Now come to the security issues data privacy is been major issue from long and cloud's basic definition is storing your data on servers and access them anywhere that is why people are having trust issue and also it is true the company which is providing you may access your data and that is clearly visible in above graph as 87.8% people are saying that whether your data is safe depends on your cloud service provider and very few people thinks that their data is at risk and 9.8% of people are praising cloud's security.

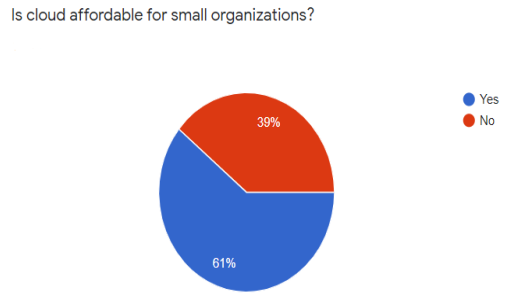
What is biggest barrier for company to switch from traditional environment to cloud environment?



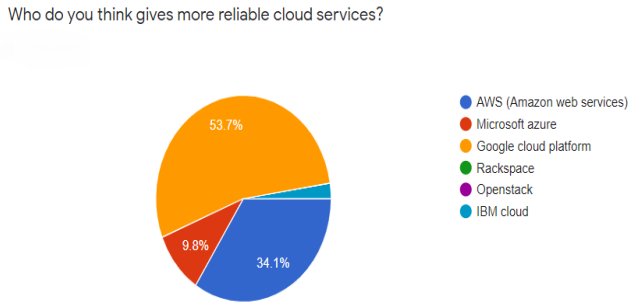
This is also one of important topic about what are barriers if any company want to switch from traditional environment to cloud based environment. I only noted few but there are some more. As we discussed 36.6% of people are finding it as issue in security of cloud which already have alternate-

Solution to it that is private cloud where another barrier arises which is cost. It is also very important that cloud should be affordable to small scale organization as they require to setup their own servers, cost for architecture of private cloud, and to hire cloud specialists for maintenance

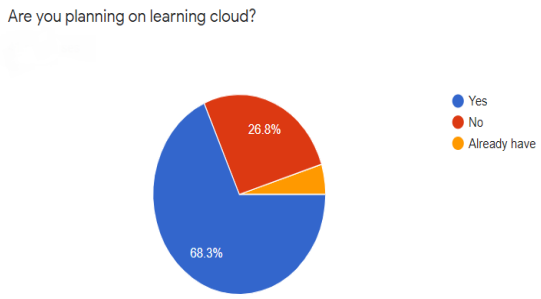
of same and 24.4% of says cost is major barrier for any small organization to enter in cloud environment. And 26.8% points out about reliability of cloud.



61% says it is affordable and 39% says no. I personally believe that it is affordable as small companies can just pay for what services they are using because of cloud's pay per use policy.



Almost half says google cloud platform gives more reliable. 9.8% says Microsoft azure, 34.1% says amazon web services.



As cloud becomes popular more and more people will start learning it as above pie chart suggest that 68.3% are now interested in learning cloud computing

Here are few reviews

1. Cloud computing is an emerging technology. It is saving physical space for organization to keep big physical servers which they used to keep in old times. It is cutting their costs at some point. It is creating new job opportunities and help people to explore more in the world of technologies and helping us bring more modifications and revolution.

2. Very soon cloud computing will replace physical storage system; but it needs to be secured & advanced.

3. Cloud computing is on every MNC's roadmap and it will be soon going to take responsibility of our major stakeholders. Increase in reliability, security and cost management are the top most priorities that everyone is looking for in cloud computing system.

4. Cloud computing is future of IT sector with more and more reliable internet connection, cloud computing is not far away where day to day life will be benefited by this

5. It's reliable but risky, also easily accessible almost zero management and administration, like you can control your data from anywhere, huge cloud storage and no need to carry it in your pocket but yes with good points there are some bad also like security issues, technical issues and not that much flexible.

3. CONCLUSIONS

As according to the survey, I conducted cloud is seems peoples are started noticing cloud and are already having some knowledge about it and it will only evolve further and further.

REFERENCES

[1] Cloud Computing: A Vital Enabler in Times of Disruption by Brad carr and Daniel pujazon

[2] COVID-19 Fuels Cloud Computing Spending Boom by David Ramel

[3] Impact of corona virus on technologies

[4] Cloud computing: from beginning to end by Ray rafaels

[5] Business resilience series: cloud computing during crisis by peter guest and Bridgitte Anderson

[6] Image of types of services by Edureka

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