

On - Premise Cloud vs Public Cloud

Sahil Kapoor

Symbiosis Institute of Computer Studies and Research
Department of MBA(IT)

Abstract:- Public cloud services and private on-premise cloud services fulfill different requirements of the users and should be chosen based on which suits the best to fulfill the requirements of their company. In this research paper the benefits and demerits of the using the Public or On-Premise cloud is given and which would be best suited for your requirements is also stated according to your varied needs.

The detailed analysis and the responses gathered using the Google form show that around 80% of the companies uses cloud services. Around 49% of the companies are using Public Cloud as the service as it is less expensive and in comparison, other 46% companies are using On-Premise due to the security and the external risks like power cut etc. which cannot be avoided in public cloud.

The gathered responses clearly show that the public cloud is still dominating the cloud services sector and the reason behind it is that it is less expensive, easy to use and it also offers the feature of scalability. This research also shows that both service types will each have their own exclusive niche sectors of companies.

Keywords:- Public Cloud, On-Premise Cloud, Federated Cloud.

I. INTRODUCTION

A. Importance of Cloud

The cloud has helped huge industries working in every sector in many ways like Storage, Security, Availability, Cost, etc. However, the companies are still confused to which of the variation of the cloud serves the best to their needs like Public, Private or On-Premise (Hybrid). On-Premise is also considered as a sub category of Private cloud. Companies are still debating over the pros and cons of using the cloud. Like everything both Public and On-premise cloud have their own pros and cons and they also share some of the features. In order to decide which variation of the cloud serves their purpose the best they'll have to conduct various analysis over the cost, storage, usage and security.

B. Public Cloud

Public Cloud is a service that is hosted on vendors server in which the vendor provide you resource like application, storage which you can access using the browser of your device. This cloud is provided for free or on pay-per-

usage model. Services like Dropbox and Google drive are provided for free up to a certain storage limit. If you want to increase the storage you have to subscribe for more storage for which you have to pay according to your needs. The main advantage of using Public cloud as a variation is it is inexpensive, you can subscribe according to your needs and you can also upscale or downscale the storage whenever you want.

C. Private Cloud

Private Cloud is a service that is used by an individual user only. This allows the user to host application on the exclusively built cloud. This helps in eliminating the threats regarding data security and control which is often lacking in the public cloud. Private cloud has two types:

➤ On-Premise Cloud

Private Cloud is a model in which all the services are provisioned over your private IT infrastructure for the use of your institution only. It is also known as Internal Cloud. It has more security and the process is also standardized but scalability and size are often limited. This model comes with an additional cost of installing physical resources which is to be bared by the company but it also provides the total control and security.

➤ Externally Hosted Cloud

This Private Cloud is hosted by a private cloud provider upon his infrastructure. These providers guarantee you full data security and privacy. This type of model offers an added feature of scalability which is not seen in On-Premise cloud model.

D. Hybrid Cloud

Hybrid Cloud is a service which combines the advantages of both public and private cloud. In this type of model, the user can leverage the provider in either full or partial manner. This helps in increasing the flexibility of computation. Combining the Private Cloud with an additional Public Cloud to manage the unexpected heavy traffic can help the company to save its business. This is made possible with the additional feature of providing on-demand, externally-provisioned scalability.

II. BENEFITS AND CHALLENGES OF PUBLIC CLOUD

➤ *Benefits*

- Less expensive – It is less expensive as all the resources are shared across multiple users who collectively pay for the services offered by the vendor.
- Easy to use – It has a very simple and straightforward subscription process with no installation process.
- Scalability – The storage can be updated as per your needs and the process of upgrade the storage is also very simple.

➤ *Challenges*

- Security – Users are responsible for the security of their own application. Public clouds provide security only up to the level of abstraction of your data. So far no major attacks have been reported against the security of public cloud still the security remain the biggest concern for the users.
- Reliability – Public Cloud are not that reliable as they are prone to electricity supply being interrupted due to man-made or natural reasons, this may affect the business.
- Availability – Cloud service can remain down for the maintenance purpose or due to some natural calamity. Thus, cloning of the cloud is necessary if the user does not want to hamper the companies working.
- Visibility of data – Users in Public cloud actually don't know where their data is being stored.

III. BENEFITS AND CHALLENGES OF ON PREMISE CLOUD

➤ *Benefits*

- Compliance – The user can customize their own regulations as per the requirement of their local and national law.
- Security – Users can deploy stricter security measures depending upon their needs and their application.
- Visibility of data – Users in On-premise cloud actually know where their data is being stored which is not possible in public cloud.
- Reliability and accessibility – In On-premise cloud you can actually control the electric supply which results in zero down-time of servers due to which your business can run smoothly.

➤ *Challenges*

- Expensive – Here the user is responsible for the maintenance, installation and keeping the servers run smoothly without any external source affecting it, hence it is expensive for the users.
- Implosive – It is implosive in nature as the user cannot increase the storage after the installation of the cloud is done.

- Complex – These types of cloud need a lot of manpower depending upon how big your company is as the resources will be complex and so would be managing the personnel.
- Manpower – These types of cloud requires user to allocate a different team altogether for the maintenance of the servers and keep them running with zero downtime.

IV. HOW TO SELECT THE PERFECT CLOUD FOR YOUR COMPANY?

Selecting the perfect cloud for your company totally depends upon your requirements and the size of your company. Before selecting which cloud to use every user should ask themselves these three questions:

- CapEx vs OpEx : Can I afford the investment required to host an On-Premise cloud?
- Backup and Disaster recovery: Do I have the best tools to secure my database from natural or manmade disasters.
- Upgrades : Do I need to avail the upgradation for all the latest functionalities and compatibilities that are being made available in the market recently

➤ *Selecting Public Cloud*

- Users who are looking for a low budget storage option.
- Users who can rely on simple and basic local or national regulations unlike the large or medium sized companies who have to comply with complex regulations decided by local or national law authorities.
- Users who do not want stricter security and confidentiality for their applications data and the data they manage.
- Users who are not sure about the storage capacity they would need can go for this option.

➤ *Selecting On-Premise Cloud*

- Users who want at most security for the confidentiality of their applications data and the data they manage should definitely go for this cloud service.
- Users having large or medium sized companies, who need to comply with the complex regulations given by the local or national authorities should go with this option as on-premise cloud allows you to customize the setting accordingly.
- Users who want complete control over the data and want to know the actual location of where their data is being stored should use this as a service.
- Users who cannot afford a single second down time of their server should also go for this option only.

V. PRICE COMPARISON

In this price comparison we have taken four scenarios depending upon the company's needs like a smaller one, a tiny deployment, a bigger enterprise and a very large enterprise. We have considered three aspects of the setup namely Compute, Storage and Network costs.

The below table 1 shows the scenario-based comparison upon the types of VM's needed.

Scenario	A	B	C	D
Small VM	20	4	200	500
Medium VM	40	10	750	1750
Large VM	10	2	150	750
Storage (TB)	10.9	2.5	171.9	468.8

Table 1

The fig. 1 depicts a bar graph of VM's used for various scenario.

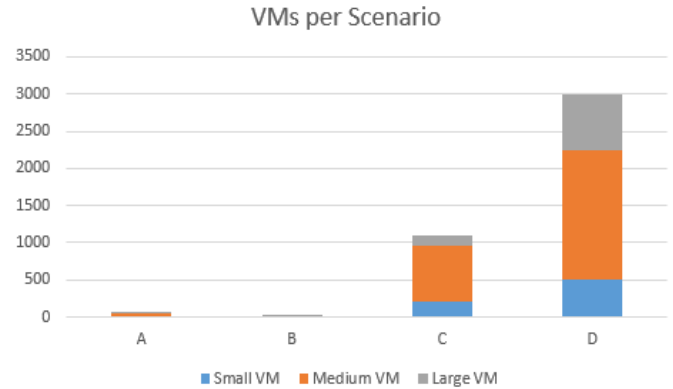


Fig 1

This are the details of the VM's needed by the companies according to the earlier shown scenario. Here each of the VM's come with 160GB of storage so the scenarios are chosen on the basis of storage capacity needed.

The below Tables 1, 2 give an approximate costing to get an On-Premise setup and a Cloud setup for your company. All the costing shown over here are in Indian Rupees and are not exact costs.

On-Premise	A	B	C	D
Compute	Rs 352740.2	Rs 235159.9	Rs 2939503	Rs 8700929
Storage	Rs 430052.6	Rs 143350.9	Rs 5303979	Rs 14335079
Network	Rs 183426.5	Rs 183426.5	Rs 366853.1	Rs 733705.3
Total	Rs 966219.4	Rs 561937.3	Rs 8610335	Rs 23769714

Table 2

Cloud	A	B	C	D
Compute	Rs 479166.7	Rs 107345.4	Rs 7763062	Rs 25864064
Storage	Rs 38033.34	Rs 8693.174	Rs 597666.8	Rs 1630000
Total	Rs 517200	Rs 116038.5	Rs 8360728	Rs 27494064

Table 3

Considering the scenario A, we find that, the computational costs are found to be higher in the Public Cloud Setup whereas the storage costs are less for the same setup. The overall cost of On-premise Cloud is 86 percent higher than Public Cloud.

Considering the scenario B, we find that, the computational and Storage costs are found to be higher in the On- Premise Cloud Setup. The overall cost of On-premise Cloud is 384 percent higher than Public Cloud.

Considering the scenario C, we find that, the computational and storage costs are found to be higher in the Public Cloud Setup. The overall cost of On-premise Cloud is 2.98 percent higher than Public Cloud.

Considering the scenario D, we find that, the computational and storage costs are found to be much higher in the Public Cloud Setup. The overall cost of On-premise Cloud is 15.66 percent lesser than Public Cloud.

We can infer from the above analysis that, for Scenarios A, B and C Public Cloud is more preferable. However, For Scenario D, On-Premise is more suitable.

VI. SURVEY REPORTS

This research provides the most comprehensive view over the growing cloud market, with the studies that span over a month and more than 50 survey responses taken. The survey was taken by the professionals working at different roles in different industries.

The fig. 2 Below shows the vivid nature of the respondents' profiles in their respective companies. This research has respondents from profiles like Software Engineer, Analyst, Vice President etc.

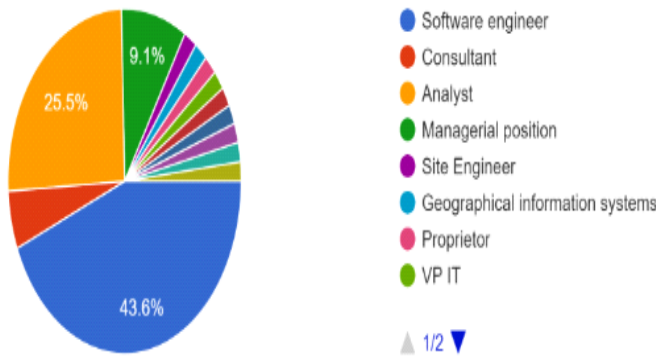


Fig 2

The below Fig. 3 Gives information regarding the respondents' company as to in which sector they are. The sector varies from IT to Banking to Manufacturing. This demonstrates the market that the cloud services have acquired.

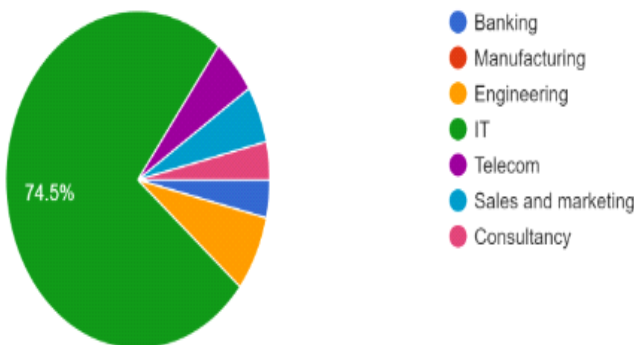


Fig 3

The below Fig. 4 Depicts various sectors in which the IT companies are working and the clients of this companies are from which sectors. The sectors like Manufacturing, Banking and Education hold the maximum number of clients for an IT company followed by Engineering, Government and Telecom industries.

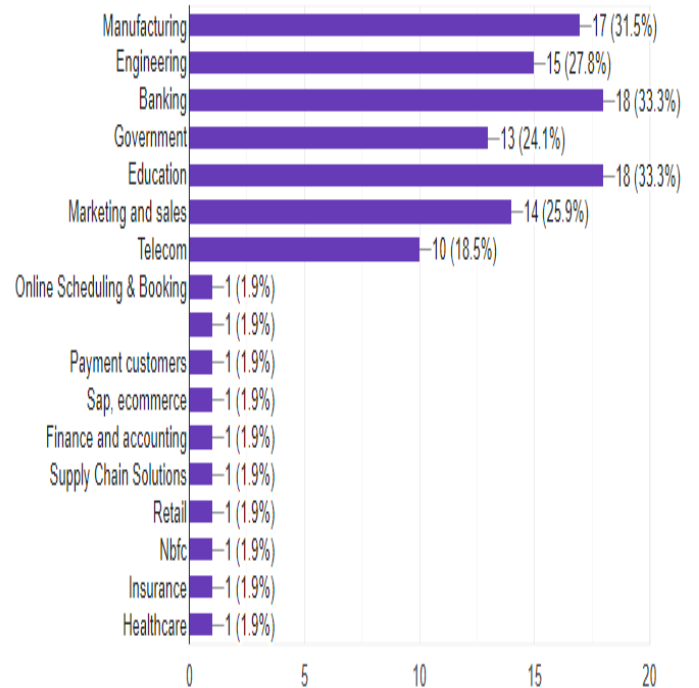


Fig 4

The below fig. 5 shows the market that the cloud services have captured. All this companies were using traditional storage methods in the past like having big server rooms for storing their data.

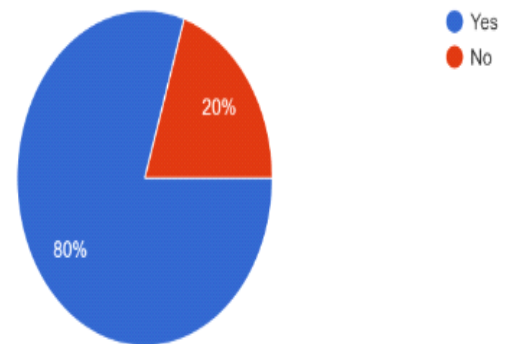


Fig 5

The below fig. 6 Depicts the data about that small market who still follow the traditional method of storing the data and the reasons why they don't want to shift to cloud services.

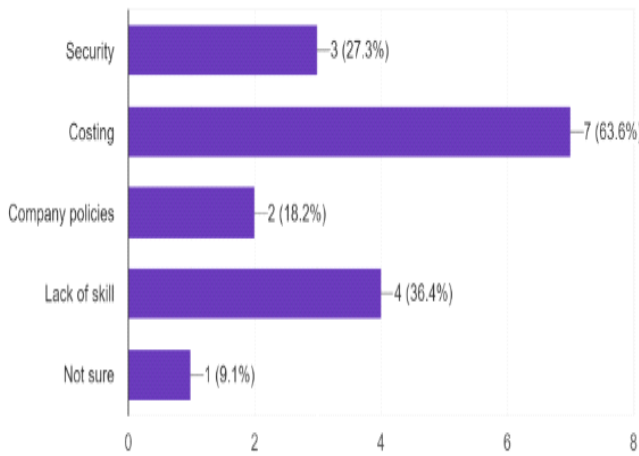


Fig 6

The below fig. 7 gives information regarding to which cloud service is used the most. This data clearly tells us that Public cloud is dominating the market with 48.8% users and then the On-Premise cloud follows it with 46.5% users and the rest of the 37.2% users are using Federated (Hybrid) cloud. This data is not calculated in 100% as most of the companies are using two or more type of cloud in order to fulfill their various requirements.

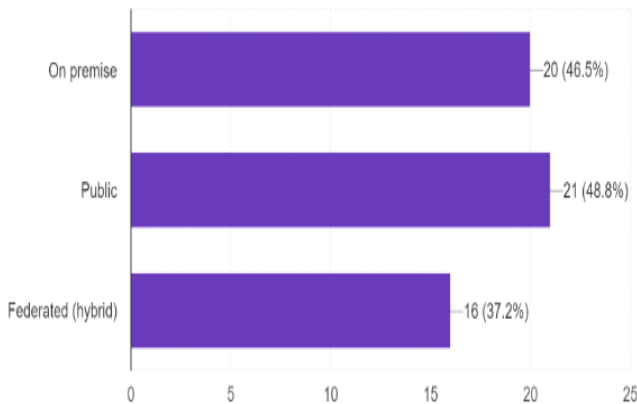


Fig 7

The fig. 8 helps us to know the preferred services that a cloud user wants and the reason why the cloud user has selected cloud services for storage rather than using the traditional method. This also helps us to know that the storage facility is the most preferred requirement of a user.

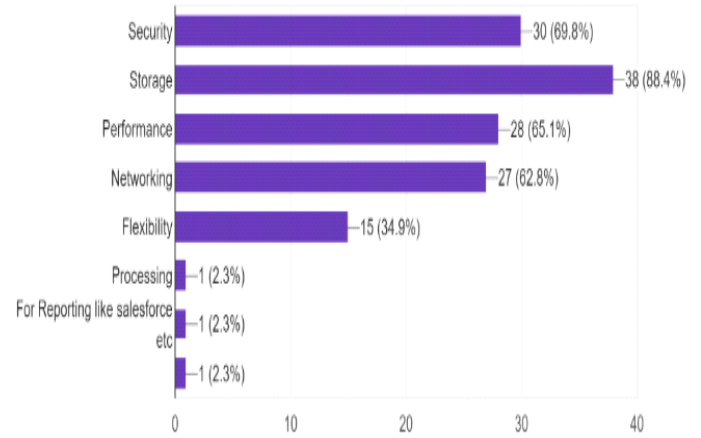


Fig 8

The below fig. 9 depicts the advantages that the user feels a cloud is providing them. In this research the availability of the service is considered to be the greatest advantage as 83.7% of the user feel that cloud has helped them to avail the access to their storage from anywhere in this world.

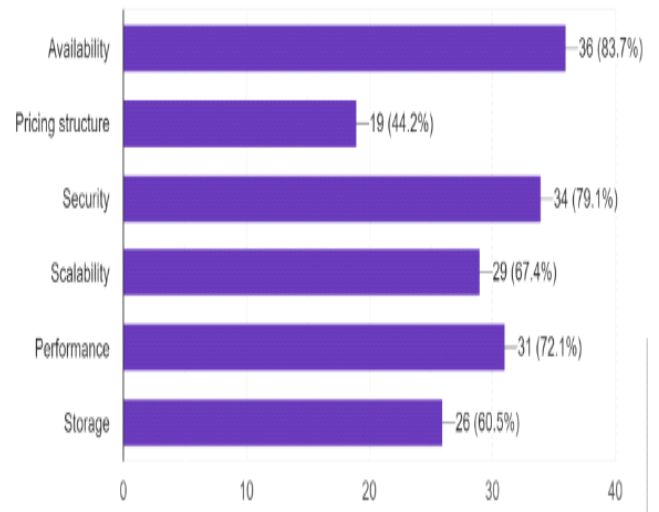


Fig 9

The fig. 10 below shows the user felt disadvantages of using the cloud as a service. This helps us to understand where the cloud services need to improve in order to give utmost advantage to its users. Here the cost factor leads as 62.8% users think that the cloud services are expensive and out of their budget following with the external risk such as power cut, server loss due to natural or manmade calamities etc.

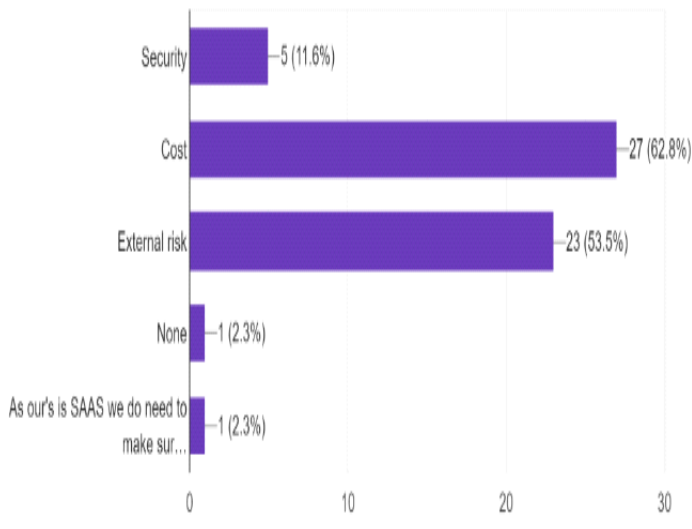


Fig 10

VII. CONCLUSION

Public cloud is dominating the cloud service market for all its inexpensiveness and indifferent storage options, it will continue to be a popular service even after the security and compliance issues that are needed to be fixed. It will continue to find acceptance among general companies and has already carved out a niche sector for itself. Private on-premise cloud, on the other hand, will gradually carve out its own niche at the company level because of its customization and security features. This research shows that both service types will each have their own exclusive niche sectors of companies.

REFERENCES

- [1]. Kaushik Pal (2016). Public Cloud vs. Private On-Premise Cloud. <https://www.techopedia.com/2/32274/trends/cloud-computing/public-cloud-vs-private-on-premise-cloud/>
- [2]. Matthew Beale (2018). Cost Comparison - Cloud vs. on-Premise 2018/19. <https://www.itproportal.com/features/cost-comparison-cloud-vs-on-premise-201819/>
- [3]. Karim Vaes (2019). TAKING THE AZURE DATA BOX GATEWAY (PREVIEW) OUT FOR A SPIN! <https://kvaes.wordpress.com/2017/02/22/comparing-costs-is-cloud-more-expensive-than-an-on-premises-setup/>