Cloud vs Local Hosting

1. Introduction

As humans come to further depend on technology, the data being used and stored has increased. This has prompted the search to find space to store information, and hence the argument of local versus cloud has been initiated. Traditionally all data was stored locally on physical hardware. As computing advancements are made, and more information is being used now than that in the past; the cost of time, money and space has demanded people look for other alternatives to local hosting. Hence, the forward shift to cloud-based software. Access to information is now not only dependent on location but the provider of the cloud service.

The purpose of this review is to explore the different cloud-based services in the form of Infrastructure as a service (Iaas), Platform as a service (Paas) and Software as a service (Saas). It will also discuss whether local hosting is still relevant and whether there are any new alternatives. From the report findings, conclusions can be made by highlighting what may be the best option for clients now and in the future, and how potential improvements can occur.

2. Hosting Services

Local hosting services are physical devices that store data which can be accessed based on a user's location and permissions [1]. Cloud hosting services are virtual servers and run on either public or private environments [2]. Private clouds are usually managed internally and are granted by a provider for the use of a single organisation. Public clouds are shared with many different users over a network. Different cloud-based services have private and public accessibilities depending on their role for the user.

2.1. Dedicated Hosting

Local hosting is the type of hosting often used on personal devices in the form of a hard drive [1]. However, in the context of a large organisation, physical servers are used. These devices can be loaned out to companies as "dedicated hosting" [3]. This ensures that each company reaches the spacing needed for storage. As companies are granted full access

rights to the servers, they obtain complete control which makes them relatively secure [3]. However, these can be quite expensive as not only are the companies paying for the devices; they are also paying for the space in which they are located, maintenance and air conditioning (servers heat up).

2.2. Software as a service (Saas)

Saas is a type of cloud service and runs on the application layer [4] of the architecture of cloud basics. The provider's host applications for clients to use usually via a network [5]. This means that downloading and installing the service is usually eliminated for this type of cloud service. Examples of Saas applications are email providers, Dropbox and Spotify [6] [5]. These are types of applications which provide users with a platform that they are not able to change but can access with their specific login. Therefore, Saas' are usually run as a public cloud for the applications to still be supported by the provider and yet can also be adjusted by the user (e.g. uploading/downloading onto Dropbox without actually changing the service) [4].

Saas reduces the cost of the service by being accessible worldwide as it can be accessed globally by the internet, and if the user has to pay, it is usually for the cost of acquiring the account as the provider thoroughly monitors the application. Due to this monitoring of functionality, the cost of the users time is also reduced [4].

However, as it is run on the public cloud, this type of cloud is open to attack by adversary's who can get access to accounts by infiltrating the actual provider. If security is breached, the Confidentiality of user information, Integrity of the provider and Availability of accounts can all be violated (CIA). These elements are part of the CIA triad; a guide for favourable information systems.

2.3. Platform as a service (Paas) and Infrastructure as a service (Iaas)

Paas and Iaas are also different cloud services. Paas runs on the platform layer which is the continuation of the application layer where Saas runs from [4]. Paas provides a service to create software directly; an example of this being Google App Engine [6]. While similar to Saas, instead of just delivering a service through a network connection, Paas providers give a

platform to host on. Therefore, users can have more freedom than Saas as users of Paas can slightly change the software rather than it being locked by the provider [4].

Iaas runs on the infrastructure layer. This is the further continuation of the other layers [4]. Iaas runs on the idea of "virtual hardware" as it offers users the most control compared to Saas and Paas. An example of this service is the Amazon Web Services (AWS) [6].

Both Iaas and Paas can be run on private or public cloud environments depending on the use of them. Public can be advantageous for data sharing quickly but has the threat of the violation of the CIA properties. Therefore, the alternative can be beneficial. Private Iaas and Paas can share information within the system to other private users. However, to maintain this, development can only occur internally [7]. Due to this resources can run out; such as effort, ideas, space and even money from the perspective of a big company.

2.4. Hybrid

In the recent years, local hosting is becoming far less popular than its alternative, cloud-based hosting. However, while cloud hosting has continued its growth, it is also not satisfying some demands of companies. Hence, private and public cloud traits have been merged to develop the "new darling", hybrid hosting. Hybrid hosting can be used in all three cloud services described before; Saas, Paas and Iaas.

Hybrid hosting uses the public cloud to data share between companies, whereas the private cloud is run by the single parent company [7]. This gives users flexibility in the choice of where they would like to host data, as well as strict management of the accessibility of certain information depending on what specific environment information is stored on [8]. A hybrid cloud is also cost efficient regarding data storage and money as the company can moderate load on the public server and consequently reduces the cost of hosting management done by a provider [8].

Not all companies use this because the cost of training an employer to use a hybrid system is high because managing different infrastructures is difficult. Even though the cost of hosting via a public provider is reduced, developing a joint system is expensive.

Hybrid clouds have similar security vulnerabilities as traditional clouds. This can occur via an adversary launching an attack through another company joined onto the public cloud which then spreads through the cloud and can infiltrate the parent company, and thus infects the private cloud which probably stores the company's private information.

3. **The Current Situation**

In the last section, different types of hosting were described and evaluated. Each type had strengths for different situations. Out of all the hosting systems, Iaas seemed to deliver the most satisfaction for companies. Iaas distributes a ready-made platform and allows users to develop systems to use and change. However, this does not mean that Saas and Paas are not desirable. They are becoming increasingly common [4] as the cost is cheaper than Iaas' as the more control the provider has, the cheaper the cost of a service. Saas is the least used as it is usually entirely dependent on a stable network and therefore, some users may not be able to access it if they are in a place where internet connection is not reliable [4].

Hybrid hosting is currently generating the most interest. There are some cons to this as discussed in the earlier section. However, the cost of traditional hosting (which use either public or private environments) has decreased over the years [7]. This viewed trend should be mimicked for hybrid hosting services as more options become available in the market and more people become skilled enough to deal with the swapping between private and public clouds on one service [7] [8]. When this occurs, hybrid hosting services could be superior to the conventional Iaas which is presently the most suitable for companies.

For larger organisations, the cost of running a cloud can be extremely high because the combined cost of the cloud service account and space the data occupies [8]. As larger organisations have a higher amount of data being stored, it may be beneficial to them to store data on dedicated servers that may be cheaper in the long run [1]. Downsides of this are that much time and human resources would have to be spent attempting to update the space requirements to store information rather than paying a provider to do that for the user.

4. Conclusion

All hosting types seem to have benefits for different scenarios. However, currently, Iaas seems to be the best option for companies that would like to use cloud services. Local hosting seems to be less used but is still a robust hosting type as it has a cheaper short-term cost. This is because local hosting is easy to use and also has more security strength. In the future, hybrid hosting will overtake all other types of hosting as the cost will decrease. The future focus needs to be directed to the protection of data on cloud services as there is an apparent gap in all cloud types which make systems vulnerable to breaches.

5. References

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Reflection

I found week two's questions on an essay from last year really helpful and would definitely be a beneficial for the future. This was because we had to evaluate the review and therefore had to look at the pros and cons of an already strong piece of writing. Another task I thought was helpful was the week four task on finding alternatives for clichés as I write and speak in those clichés so is a good reference for me to go back to in order to fund succinct versions of the words.

I did not find week 3's tutorial tasks extremely helpful for me as they were a bit confusing and my attention did not stick to those tasks. The summary also wasn't super helpful; it seemed like something that could've been a task in the tutorial rather than its own homework.

Finding actual relevant articles for this topic was very confusing. A lot of the resources seem to be reviews of information found from the general webpages, but even the sources of the reviews seem to be other reviews or blog entries/website definitions rather than an actual journal article or conference article.

To modify this assignment I would have not had the question as broad as it was as it was very hard trying to find relevant articles.