Cloud Computing and Applications

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Abstract

Cloud computing is a computing model based on the internet and developed from grid computing. The author introduced the fundamental principle and took examples from daily life to explain the concept. Analyzed common cloud computing types and their significance to users in the aspects of technology and business, and pointed out the cloud computing's trend characteristics and use in advanced technologies.

I. Cloud computing accessibility and principle

The word 'cloud computing' is more and more close to our life. What is cloud computing? The cloud refers to the place where computing and storing data, that is the server. The uploading and receiving of data operate via the internet, the user does not need to purchase extra equipment to receive the output data.[1]

Computing at a server sounds good, but how do we divide computing resources among users? The resource pooling is the solution. It collects the resources and dynamically distribution them to users. A similar example is the limitation of bandwidth in the school. In this scenario, the total bandwidth (computing or storing resources) is limited and users' needs may vary, therefore the actual charging depends on their actual resources taken.

II. Cloud computing in our life

The cloud computing is widely used in many sectors of our society. From the storage data to deep/machine learning, it is everywhere. As I mentioned in the text, the closest cloud computing around us is the cloud storage. User upload data via internet connection, where it

is saved in a virtual machine on a physical server. Usually, the data will be spread across the world and stored in different data centers by its provider to maintain availability and provide redundancy. 【2】

There are usually two purposes of using cloud-computing-related services, the first is testing that is based on massive computes, and the second is backup data. An ironic thing is that my Word document crashed while typing this article, so I sent it to my phone via WeChat (the internet)as a backup, now we have a real sample of “using of cloud computing”.

III. Common cloud computing types and examples

There are usually three services the vendors providing to cloud computing users. As the order of user controlling degrees from low to high, the three types are respectively, Saas (Software as a service), Paas (Platform as a service), and Iaas (Infrastructure as a service). If we do grouping depend on the consumer, we, the end consumers are the users of Saas. Examples are google ecosystem such as google drive, Gmail, or google docs, another example is any applications in the Microsoft office 365. The Saas has pros like universally accessible for all platform, or cons like the performance reliance to the internet.[3]

If the Saas almost providing everything in the cloud computing process, then the Paas (Platform as a service) is more like a work frame, or development environment. Different to the characteristics of Saas who provide software as a service, the audiences of Paas are developers. “The user of Paas are allowed to developing, running, and managing their programs under specific situation.”[4] Examples of Paas are windows Azure, Amazon web services, and AWS elastic beanstalk.

Although the Paas has more degree of freedom, but it still limited to the provider's languages and tools. Comparatively, the Iaas (Infrastructure as a service) has highest operability, including the operating system, middleware, data, and applications, differ to the Paas, the using of Iaas requires its user to maintain and manage the platform.[5] Therefore, the user of Iaas are mainly system administrators.

IV. Overall statement

Everyday life activities such as Banking, Email, Media Streaming, and Ecommerce all use the Cloud. On the Business side, Applications, Infrastructure, Storage, all have their presence out in the Cloud. The top advanced technologies such as machine learning and artificial intelligence all depend on the cloud. Generally speaking, cloud computing is a model that allocates business resources on demand. It is a successful business model based on the internet, meanwhile, it is a modern solution for transmitting computing power over the network to improve hardware costs in commercial and related IT industries.

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