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Merits & Demerits of Cloud Computing Services: A Survey

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Abstract :
Cloud computing is the development of parallel computing, distributed computing, grid computing and virtualization technologies which define the shape of a new era. Cloud computing is an emerging model of business computing. In this paper, we explore the concept of cloud architecture and compares cloud computing with grid computing. We also address the characteristics and applications of several popular cloud computing platforms. In this paper, we aim to pinpoint the merits and demerits of cloud computing. We discussed several services the cloud computing adoption perspective. However, security and privacy issues present a strong barrier for users to adapt into cloud computing systems.

***Index Terms* — Cloud computing, Merits & Demerits, cloud platforms, research issues.**

1. Introduction :

In an age of information and globalization, massive computing power is desired to generate business insights and competitive advantage. A traditional way for enterprises to process their data is to use the computing power provided by their own in-house data centers. However operating a private data centre to keep up with rapidly growing data processing requests can be complicated and costly. Cloud computing offers an alternative. 'Cloud computing', as a term for Internet-based computing service, was launched by industry giants (e.g. Google, Amazon.com, etc.) in late 2006. It promises to provide on-demand computing power with quick implementation, low maintenance, fewer IT staff, and consequently lower cost. Such appealing promises have made cloud computing a dominant IT press topic over the past three years. As projected by market-research firm IDC, IT cloud-service spending will grow from about USD16 billion in 2008 to about USD42 billion by 2012. The remainder of this article is organized as follows:

2. Cloud Computing Services :

Cloud service models are commonly divided into -

A. SaaS : (Software as a Service)
B. PaaS : (Platform as a Service)
C. IaaS : (Infrastructure as a Service)

It's helpful to add more structure to the service model stacks. Fig. 1 shows a cloud reference architecture that makes the most important security-relevant cloud components explicit and provides an abstract overview of cloud computing for security issue analysis.

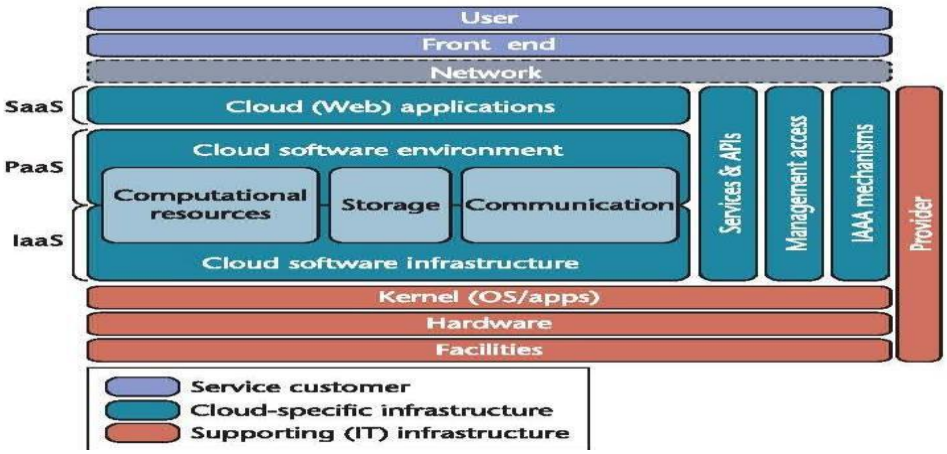

Figure: 1

A. Software as a Service (SaaS) :

Software or an application is hosted as a service and provided to customers across the Internet. This mode eliminates the need to install and run the application on the customer's local computers. SaaS therefore alleviates the customer's burden of software maintenance, and reduces the expense of software purchases by on-demand pricing. An early example of the SaaS is the Application Service Provider (ASP). The ASP approach provides subscriptions to software that is hosted or delivered over the Internet. Microsoft's "Software + Service" 30) shows another example: a combination of local software and Internet services interacting with one another.

Google's Chrome browser 21) gives an interesting SaaS scenario: a new desktop could be offered, through which applications can be delivered (either locally or remotely) in addition to the traditional Web browsing experience. A prominent example of SaaS is Salesforce.com's online CRM system.

B. Platform as a Service (PaaS) :

PaaS moves one step further than IaaS by providing programming and execution environments to the user. A PaaS product acts as an integrated design, develop, test, and deploy platform. The PaaS user can create applications using programming languages and APIs supported by the provider, and then directly deploy the applications onto the provider's cloud infrastructure within a few clicks. The PaaS user does not manage or control the underlying cloud infrastructure (including network, servers, operating systems, or storage), but has control over the deployed applications and possibly application hosting environment configurations. Such an approach can reduce most of the system administration burden (e.g. setting up and switching among development environment, test environment, and production environment) traditionally carried by the developers who can then concentrate on more productive problems. PaaS typically provides a complete set of development tools, from the interface design, to process logic, to integration. Some other appealing features of PaaS include built-in instruments measuring the usage of the deployed applications for billing purposes and an established online community for collaboration and problem solving. An example of PaaS is Google's App Engine, which enables users to build applications on the same scalable systems that power Google applications .

C. Infrastructure as a Service (IaaS) :

IaaS provides the raw materials of cloud computing, such as processing, storage and other forms of lower level network and hardware resources in a virtual, on demand manner via the Internet. Differing from traditional hosting services with which physical servers or parts thereof are rented on a monthly or yearly basis, the cloud infrastructure is rented as virtual machines on a peruse basis and can scale in and out dynamically, based on customer needs. Such on-demand scalability is enabled by the recent advancements in virtualisation and network management. IaaS users do not need to manage or control the underlying cloud infrastructure but have control over operating systems, storage, deployed applications, and in some cases limited control of select networking components (e.g. host firewalls) .Typical IaaS examples are Amazon EC2 (Elastic Cloud Computing) and S3 (Simple Storage Service) where computing and storage infrastructure are open to public access in a utility fashion.

3. Advantages of Cloud Computing:

Advantages of cloud computing specifically, cloud computing offers the following key advantages:

A. It dramatically lowers the cost of entry for smaller firms trying to benefit from compute-intensive business analytics that were hither to available only to the largest of corporations. These computational exercises typically involve large amounts of computing power for relatively short amounts of time, and cloud computing makes such dynamic provisioning of resources possible.

B. It can provide an almost immediate access to hardware resources, with no upfront capital investments for users, leading to a faster time to market in many businesses. Treating IT as an operational expense (in industry-speak, employing an 'Op-ex' as opposed to a 'Cap-ex' model) also helps in dramatically reducing the upfront costs in corporate computing. For example, many of the promising new Internet startups like 37 Signals, Jungle Disk Gigavox, SmugMug and others were realized with investments in information technology that are orders of magnitude lesser than that required just a few years ago.

C. Cloud computing makes it easier for enterprises to scale their services – which are increasingly reliant on accurate information – according to client demand. Since the computing resources are managed through software, they can be deployed very fast as new requirements arise. In fact, the goal of cloud computing is to scale resources up or down dynamically through software APIs depending on client load with minimal service provider interaction.

4. Disadvantages of Cloud Computing :

Although there are many benefits to adopting cloud computing, there are also some significant barriers to adoption .

A. Security & Privacy Issue:

Because cloud computing represents a new computing model, there is a great deal of uncertainty about how security at all levels (e.g., network, host, application, and data levels) can be achieved. That uncertainty has consistently led information executives to state that security is their number one concern with cloud computing.

The ability of cloud computing to adequately address privacy regulations has been called into question. Organizations today face numerous different requirements attempting to protect the privacy of individuals' information, and it is not clear (i.e., not yet established) whether the cloud computing model provides adequate protection of such information, or whether organizations will be found in violation of regulations because of this new model.

B. Connectivity Issue :

The full potential of cloud computing depends on the availability of high-speed access to all. Such connectivity, rather like electricity availability, globally opens the possibility for industry and a new range of consumer products. Connectivity and open access to computing power and information availability through the cloud promotes another era of industrialization and the need for more sophisticated consumer products .

C. Consistency :

Enterprise applications are now so critical that they must be reliable and available to support 24/7 operations. In the event of failure or outages, contingency plans must take effect smoothly, and for disastrous or catastrophic failure, recovery plans must begin with minimum disruption. Each aspect of reliability should be carefully considered when engaging with a CSP, negotiated as part of the SLA, and tested in failover drills. Additional costs may be associated with the required levels of reliability; however, the business can do only so much to mitigate risks and the cost of a failure. Establishing a track record of reliability will be a prerequisite for widespread adoption .

5. Conclusion :

We see that cloud computing can be used to address tactical problems with which IT continually deals, like resource availability and reliability, data center costs, and operational process standardization. The pain points discussed above illustrate a progression of change that most corporations have already begun, whether they are just starting up or are well established. We began with use of cloud hosting services as an alternative to self-hosting, or as an alternative to other current day third party hosting arrangements that do not offer at least the potential of cloud computing. For those companies that need to pursue implementation and management of a service-oriented architecture, we discussed pain points relating to re-architecting current platforms to leverage cloud computing, and the possible need to formalize the way that policy is used to manage IT platforms within and across service grid boundaries.

7. References:

[1] Sajid, Mohammad, and Zahid Raza. "Cloud computing: Issues & challenges." *International Conference on Cloud, Big Data and Trust*. Vol. 20. No. 13. 2013.

[2] Rao, R. Velumadhava, and K. Selvamani. "Data Security Challenges and Its Solutions in Cloud Computing." *Procedia Computer Science* 48 (2015): 204-209.

[3] Low, Chinyao, Yahsueh Chen, and Mingchang Wu. "Understanding the determinants of cloud computing adoption." *Industrial management & data systems* 111.7 (2011): 1006-1023.

[4] A Vouk, Mladen. "Cloud computing–issues, research and implementations." *CIT. Journal of Computing and Information Technology* 16.4 (2008): 235-246.

[5] Sriram, Ilango, and Ali Khajeh-Hosseini. "Research agenda in cloud technologies." *arXiv preprint arXiv:1001.3259* (2010).

[6] Khajeh-Hosseini, Ali, Ian Sommerville, and Ilango Sriram. "Research challenges for enterprise cloud computing." *arXiv preprint arXiv:1001.3257* (2010).

[7] Kumar, Santosh, and R. H. Goudar. "Cloud Computing-Research Issues, Challenges, Architecture, Platforms and Applications: A Survey." *International Journal of Future Computer and Communication* 1.4 (2012): 356.

[8]Zhang, Qi, Lu Cheng, and Raouf Boutaba. "Cloud computing: state-of-the-art and research challenges." *Journal of internet services and applications* 1.1 (2010): 7-18.

[9] Yang, Wei, and Carol Fung. "A survey on security in network functions virtualization." *2016 IEEE NetSoft Conference and Workshops (NetSoft)*. IEEE, 2016.

[10] Jerković, H., P. Vranešić, and A. Radan. "Analysis of Learning Management Systems features and future development challenges in modern cloud environment." *2016 39th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)*. IEEE, 2016.

[11] Santosh Kumar and R. H. Goudar. " Cloud Computing – Research Issues, Challenges, Architecture, Platforms and Applications: A Survey*."International Journal of Future Computer and Communication, Vol. 1, No. 4, December 2012*.