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   OBJECTIVES

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   RESULTS & DISCUSSION

   FINDINGS

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   CONCLUSIONS

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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CLOUD COMPUTING: SMARTER COMPUTING FOR A SMARTER WORLD

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ABSTRACT

Cloud computing, one of the emerging topics in the field of information technology is the development of parallel computing, distributed computing and grid computing. It is an emerging buzzword in the Information Technology, and is growing day by day due to its rich features of services. It is a virtual pool of resources which are provided to the users through Internet. Cloud computing is a new flavour of computing where our trend of using Internet changes. It is the future of Internet. It can also concentrate all computation resources and manage automatically through the software without intervene. There are several layers in present cloud computing architecture, service models, platforms, issues i.e. security, privacy, reliability, open standard etc. and types. This paper presents all about the promising cloud computing technology i.e. its architecture, advantages, platforms, issues and challenges, applications of cloud computing.

KEYWORDS

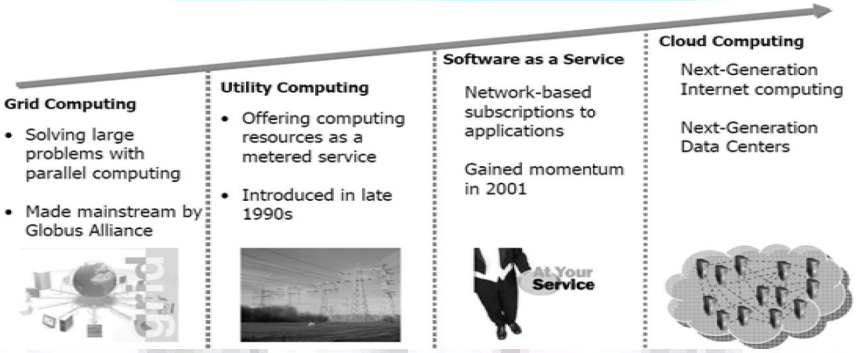
Cloud computing, SaaS, PaaS, IaaS, Cloud Security.

I. INTRODUCTION

Cloud computing is relatively new data storage and processing concept that has all the top tech companies competing for cloud domination [1]. Imagine the ability to access your files from any computer at any place on earth, coupled with the fastest processing speed available regardless of your operating system. This is the promise of cloud computing: an internet-based solution to the traditional problems of variable storage, accessibility, and speed of computers. But the implications are more far-reaching than just personal computer use: this development may be the solution that allows start-ups to overcome the traditional hurdle of business investment.

Cloud Computing is the latest developments of computing models after distributed computing, parallel processing and grid computing. Cloud computing achieve multi-level virtualization and abstraction through effective integration of variety of computing, storage, data, applications and other resources, users can be easy to use powerful computing and storage capacity of cloud computing only need to connect to the network. There is no doubt that cloud computing is the most popular topic in IT industry in 2009, Google, Amazon, Yahoo and other Internet service providers, IBM [2] and [3], Microsoft and other IT vendors have put forward their own cloud computing strategy, various telecom operators are also have put a great deal of attention on cloud computing, the very low cost of cloud computing platform becomes the focus of the industry [4]. The characteristics of cloud computing are described as follows: The cloud computing (1) provides reliable and secure data storage centers, by using cloud computing, users do not have to worry about data loss, software updates, viruses attacks and other issues; (2) requires low about the initial configuration of customers' equipment and is also easy to use; (3) realizes processing documents between different places as well as achieves document sharing and applying among diverse devices [5].

FIG. 1: EVOLUTION OF CLOUD COMPUTING IN IT

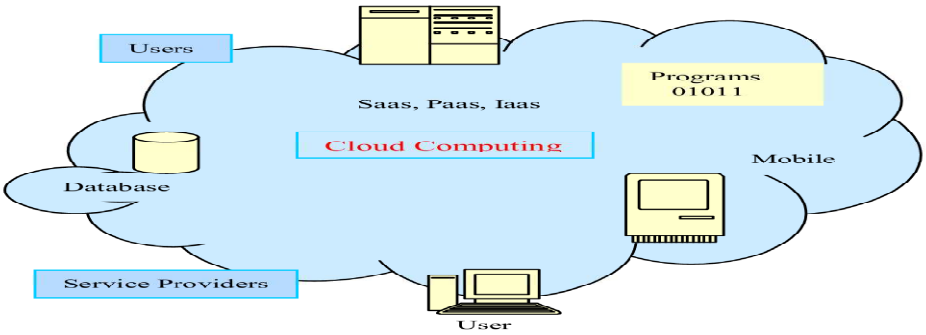


The term Cloud Computing means that you receive IT processing *as a service rather than as a product or software*. The easiest way to visualize this is to compare to electricity: local computing is comparable to everyone owning a mechanical generator to produce their own electricity [6]. Cloud computing is about centralizing the computing activity, similar to producing electricity in power plants and distributing it via grids.

II. WHAT IS CLOUD COMPUTING?

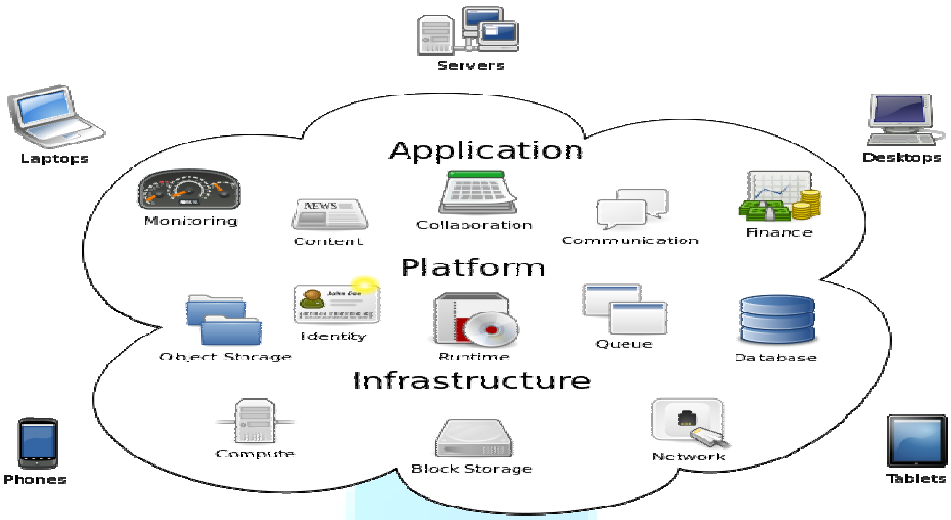
Cloud computing is an emerging computing technology that uses the internet and central remote servers to maintain data and applications. This technology allows for much more efficient computing by centralizing storage, memory, processing and bandwidth [7] and [8].

FIG. 2: CLOUD COMPUTING



Cloud: The term cloud is used as a metaphor for the internet, based on how the internet is depicted in computer network diagrams and is an abstraction for the complex infrastructure it conceals.
Computing: The broader term of "Computing" encompasses: Computation coordination logic storage
"Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

FIG. 3: SERVICES OF CLOUD COMPUTING



Cloud computing is also a new mode of business computing, it will be widely used in the near future. The core concept of cloud computing is reducing the processing burden on the users' terminal by constantly improving the handling ability of the "cloud", eventually simplify the users' terminal to a simple input and output devices, and busk in the powerful computing capacity of the cloud on-demand.

III. WHY CLOUD COMPUTING?

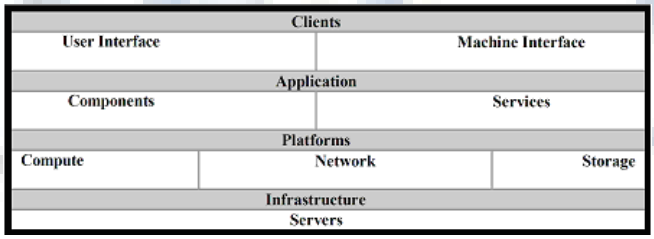
Many different networks already use this model of data storage. Facebook or LinkedIn, for instance, maintain all their user data on centralized servers, accessible from the internet anywhere. This is how peer-to-peer networks, social networks, and e-mail providers traditionally operate. Expanding this paradigm to all types of data – from business documents to music storage – would potentially free all personal computers of the cumbersome task of archiving every bit of a user's information. Not only would this increase the ease of personally navigating, opening, and uploading files, but it would also imply dramatically lower capital costs for firms. Instead of having to purchase servers and software capable of being used by multiple employees simultaneously, a firm can subscribe to a cloud provider for a low cost, specify the computing capacity it requires, and capitalize on the provider's economy of scale.
The low investment costs promised by cloud computing would dramatically alter the landscape for start-up firms especially. Without the need to invest heavily in computing equipment, the risk of creating a start-up firm would drop significantly, as would its requirement for outside resources and funding. As such, entrepreneurs would feel more secure in creating new firms with the knowledge that the sunk costs implied would be minimal compared to previous firm creation. The risk of failure, while still present, would not be nearly as significant with the drop in technology expenditures. In a period where the world is working to overcome one of the largest economic crises in recent memory, this technological revolution provides a promising opportunity for getting business – and economic investment – back on track.
Cloud computing has some downsides and glitches that need to be worked through. For instance, owners of Sidekick mobile phones in October lost tons of personal data, from calendars to address books, which were being stored in a cloud by Danger, a firm related to Microsoft. However, with the amount of investment and research being poured into cloud computing, we should expect to see it become the new paradigm for data storage and processing. The next steps in its development and implementation could go any direction, but one thing is for certain: it promises to revolutionize the way businesses and people use computers.

IV. ARCHITECTURE OF CLOUD COMPUTING

A. CLOUD COMPUTING LAYERS

Cloud computing is broken down into five segments: Clients, applications, platforms and infrastructure and servers [9]. Each segment serves a different purpose and offers different products for businesses and individuals around the world.

FIG. 4: CLOUD COMPUTING LAYERS



1) Clients: A cloud client consists of computer hardware and/or computer software that relies on cloud computing for application delivery, or that is specifically designed for delivery of cloud services and that, in either case, is essentially useless without it. And the server layer consists of computer hardware and/or computer software products that are specifically designed for the delivery of cloud services.
2) Application: Cloud computing application services, also known as '***Software as a Service (SaaS)***', is used to deliver software as a service over the Internet. Hence it eliminates the need of installing and running the application on the customer's own computers, which in turn simplifies maintenance and support.
The key characteristics of an application include:
Network-based access to the commercially available (i.e. not custom) software, and
Management of the commercially available software.
Some basic activities that are managed from central locations, hence enabling the customers to remotely access applications via the Web, such as:

Application delivery typically closer to a one-to-many model rather than one-to-one model. It includes the basic architecture, pricing options, partnering, and even management characteristics.

Centralized feature updating which necessitates the downloading of various patches and upgrades.

3) Platforms: Cloud platform services, also known as '***Platform as a Service (PaaS)***', deliver a computing platform and/or a solution stack, which often consumes cloud infrastructure and sustains cloud applications. Its basic purpose is to facilitate the deploying of applications without the cost and complexity of buying and managing the underlying hardware and software.

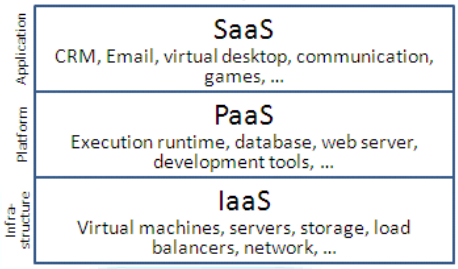
4) Infrastructure: Cloud infrastructure services, also known as '***Infrastructure as a Service (IaaS)***', deliver the computer infrastructure as a service, which is a platform virtualization environment. The service is billed on a utility computing basis and the amount of resources consumed typically reflect the level of activity.

5) Servers: Server is the set of computer hardware and/or software products which are specifically designed for the services of cloud computing.

B. SERVICE MODELS

At present, almost all the well-known IT providers, Internet providers, and even telecommunications operators march toward cloud computing, and launch their own cloud services [10]. As mentioned earlier, the current cloud computing service model can be divided into three categories: SaaS, PaaS, and IaaS, which is recognized as SPI, as Fig.5 shown below.

FIG. 5: SERVICE MODELS



1) SaaS (Software as a Service): Software as a Service is software which is deployed over the internet and/or is deployed to run behind a firewall in our local area network or personal computer. SaaS is a new form by which users access the software service. Under SaaS model, it is not required for the users to purchase software products installed on their own computer or server, but by the use of the payment model, i.e. to lease software. In some cases the software is free, but users have limited right to use the software. Essentially, SaaS is a computing power which is provided by software service provider to meet with the users' need. At present, the typical applications of SaaS are online services such as e-mail services, web conference, network fax, online antivirus and on-line entertainment applications such as Web search, online games and online video and management services such as online project management and online ordering platform [4]. Hence, SaaS model reduces the deployment cost for business and individuals. SaaS is the development trend of future software industry development. These days not only Microsoft, Salesforce and other major software giant launched its own SaaS applications, but also Yong You and Kingdee, domestic software giant, also joined in.

2) PaaS (Platform as a Service): Platform as a Service is another SaaS, and this kind of cloud computing provides development environment as a service. We can use the middleman's equipment to develop our own program and deliver it to the users through Internet and servers. As a service to customers, PaaS can provide complete computer platforms, including application design, application development, application testing and application hosting. By using this service mode, the client can build web applications without deploying the hardware and software facilities on their own computer. Compared to software development platform based on the data center, the cost of PaaS is much lower. This lower cost is also the maximum value of PaaS [2] and [3]. The typical application examples of PaaS are the Facebook development platform and Microsoft Windows Azure platform. PaaS has a good market prospect. For providers who offer SaaS services, PaaS can help them diversify their product and carry out custom-built services. At the same time, PaaS, reduces the cost of the SaaS application development and improves the efficiency of development.

3) IaaS (Infrastructure as a Service): Infrastructure as a service delivers a platform virtualization environment as a service. Rather than purchasing actual servers, software, data centre space or network equipment, clients instead can use cloud computing technology to access to remote computing resources, which include computing, storage, and application virtualization technology-related functions [2] and [3]. IaaS mode is similar to utility computing as the basic idea of the latter is to provide computing services. No matter whom the end-users are, SaaS providers or PaaS providers can obtain computing power they need from the infrastructure services provider, without paying the original investment cost for the basis of IT hardware and software. At present, Microsoft, Amazon, Century Internet and other providers can provide IaaS services based on hardware. Through cloud computing technology, they can collect memory, I/O devices, storage and computing capacity together into a virtual pool of resources to provide services for end users and SaaS, PaaS providers. As compared to SaaS, the application of IaaS is not very mature, because many key technologies need further research and development.

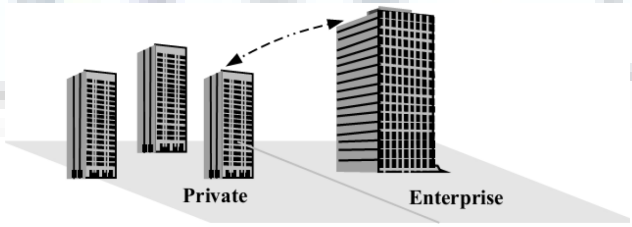
V. TYPES OF CLOUD COMPUTING

There are three types of cloud computing, these are public cloud, private cloud and hybrid cloud [11]. The brief is given below.

A. PRIVATE CLOUD

Private cloud, also can be called internal cloud, whose services are not available for others, but for their own internal staff or affiliates to use. Private cloud is cloud infrastructure operated solely for a single organization, whether managed internally or by a third-party and hosted internally or externally [12]. This is protected by the firewall to form a barrier against outside the world to access hosted services from the private cloud.

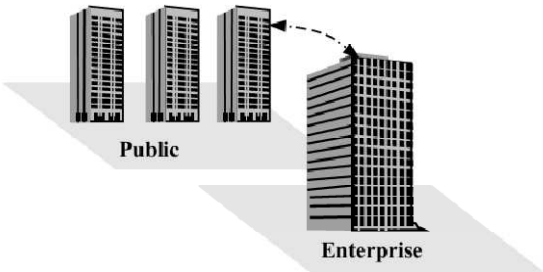
FIG. 6: PRIVATE CLOUD



B. PUBLIC CLOUD

Public clouds, also known as external cloud, provide services for external customers; all of its services are available for others to use, rather than for their own. Public cloud applications, storage, and other resources are made available to the general public by a service provider. These services are free or offered on a pay-per-use model. The services provided in these clouds can be accessed by any organization.

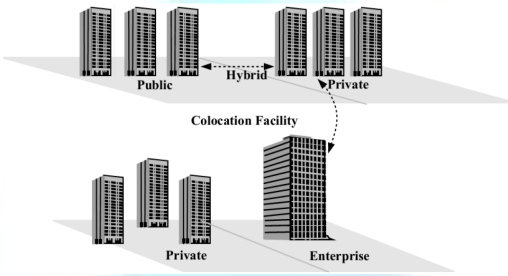
FIG. 7 PUBLIC CLOUD



C. HYBRID CLOUD

Hybrid clouds are the combination of public cloud and private cloud that means the hybrid cloud can provide services for both the creator themselves and their customers. Hybrid cloud is a composition of two or more clouds (private, community or public) that offer services to the limited and well defined number of parties [13]. In order to ensure security, agencies should run the non-core applications on public cloud and use private cloud to support its core program and store internal sensitive data, when they use of hybrid cloud computing model.

FIG. 8 HYBRID CLOUD



VI. CLOUD COMPUTING ISSUES

In the last few years, cloud computing has grown from being a promising business concept to one of the fastest growing segments of the IT industry. But as more and more information on individuals and companies is placed in the cloud, concerns are beginning to grow about just how safe an environment it is. T. Dillon et al say about some issues in their paper [12]. In this section we also describe all potential issues related to cloud computing in brief.

A. SECURITY

There is always a debate on the security of data on the high security servers in the cloud as compared to the data on the local hard driver. Some people argue that the data is more secure when managed internally, while some argue that cloud service providers have a strong incentive for the maintenance of trust and as such employ a higher level of security [14].

However, in the cloud, the customer data is being distributed over individual computers regardless of the location of the base repository of data. Industrious hackers can invade virtually any server, and statistics show that one-third of breaches result from stolen or lost laptops and other devices and from employees' accidentally exposing data on the Internet, with only 16 per cent due to insider theft.

B. PRIVACY

Cloud computing utilizes the virtual computing technology which is a whole lot different from the traditional computing model. The customer's personal data is scattered in various virtual data centres' rather than staying in the same physical location, even across the national borders. Hence data privacy protection has to face the controversy of varying legal systems. On the other hand, users may sometimes accidentally leak hidden information while accessing cloud computing services. Attackers can analyse the critical task depending on the computing task submitted by the users [15].

C. RELIABILITY

Servers in the cloud have the same issues as any users own resident servers. The cloud servers may also experience downtimes and slowdowns. The only difference is that users have a higher dependence on cloud service provider (CSP) in the model of cloud computing. There is a big difference in the CSP's service model, as once a particular CSP is selected you may be locked-in, thus bringing in a potential business secure risk.

D. LEGAL ISSUES

Regardless of all the previous efforts to bring into line the lawful situation, as of 2009, suppliers such as Amazon Web Services provide to major markets by developing restricted road and rail network and letting users to choose "availability zones". On the other hand, there are still some worries which stick with safety measures and confidentiality from an individual all the way through legislative levels [16].

E. OPEN STANDARD

Open standards are very critical to the growth of cloud computing. Most cloud providers expose APIs which are typically well-documented but also unique to their implementation and thus not interoperable. Some vendors have adopted others' APIs and there are a number of open standards under development, including the OGF's Open Cloud Computing Interface. The Open Cloud Consortium (OCC) is working to develop consensus on early cloud computing standards and practices [17] and [18].

F. COMPLIANCE

Numerous regulations pertain to the storage and use of data. They also require regular reporting and audit trails. All the cloud providers must enable their customers to comply appropriately with these regulations. Managing Compliance and Security for Cloud Computing provides insight on how a top-down view of all IT resources within a cloud-based location can deliver a stronger management and enforcement of compliance policies.In addition to the requirements to which customers are subject, the data centres maintained by cloud providers may also be subjected to some additional compliance requirements [19].

G. FREEDOM

In cloud computing, the users are not allowed to physically possess the storage of the data, hence leaving the data storage and control in the hands of cloud providers. Customers will contend that this is pretty fundamental and affords them the ability to retain their own copies of data in a form that retains their freedom of choice and protects them against certain issues out of their control whilst realizing the tremendous benefits cloud computing can bring [20].

H. LONG-TERM VIABILITY

You should be sure about the validity of the data put into the cloud even when your cloud computing provider goes broke or gets acquired and swallowed up by a larger company. Gartner says that one should always ask potential providers about how you would get back your data and whether it would be in a format that you could import into another similar replacement application [21].

VII. ADVANTAGES AND SHORTCOMINGS

A. ADVANTAGES OF CLOUD COMPUTING

1) *Benefit to Business:* Businesses can obtain the benefits of the underlying infrastructure without the need for direct implementation and administration.
2) *Environment Friendly:* There is no need for the actual hardware installation in the use of cloud computing, hence the reduction in energy costs as well as CO_2 emissions.
3) *Easy Backup:* The backup is much easy to obtain and maintain as compared to the traditional 'Thick Client' PCs.
4) *Recovery from Disasters:* As the hardware is scattered at the backend rather than being centrally located at one place, hence the risk of total data loss is never encountered.
5) *Easy Scalability:* The system is easily scalable as there is a little need for the software or hardware customization at the client end.
6) *Information Mobility:* As the service is now used globally, hence information is available at all the extremes of the world.
7) *Low Cost:* Pertaining to utility computing, there is a low initial cost required to set up cloud computing services on a simple PC.

B. SHORTCOMINGS OF CLOUD COMPUTING

1) *Regulatory Compliance:* Even when the data is held by a third party provider, the users are responsible for the security and integrity of their own data.
2) *Dependency:* There is a dependency on the application provider, as it is only possible to use the services or applications that the provider is willing to offer.
3) *Difficult Recovery:* Backups are difficult to obtain due to segmented data over large geographical locations.
4) *Data Storage:* Cloud computing does not allow the users to get a physical store of their data, as the data storage is done by the service provider.
5) *Logging and Investigation Support:* It is not possible to know who altered the data on the server; hence there is a lack of investigative support.
6) *Data Location and Privacy Restrictions:* Various countries have varying privacy standards which are subject to varying laws, hence there is a discretion among different users.

VIII. CONCLUSION

In this paper, we discussed a fresh technology of cloud computing. We described the definition, styles characters, services and some existing issues. It is predicted that this technology brings for us an infinite capability of computing, fast micro-processor, huge memory, high-speed network, reliable system architecture etc.

There is no doubt that the cloud computing is a new emerging technology in the present world. Cloud computing brings us the approximately infinite computing capability, good scalability, service on-demand and so on. Though each cloud computing platform has its own strength, one thing should be noticed is that no matter what kind of platform there is lots unsolved issues. For example, continuously high availability, performance, data confidentiality, auditability, synchronization in different clusters, interoperation, standardization, and the security of cloud platform are some of the major research hotspots of cloud computing.

There is no doubt that cloud computing has a bright future [22]. Therefore, to welcome the coming cloud computing era, and solving the existing issues becomes utmost urgency.

IX. REFERENCES

1. Brian Hayes, "Cloud Computing," Communications of the ACM, vol. 51, Iss. 7, July, 2008, pp. 9–11.
2. C. Clark, K. Fraser, S. Hand, J. G. Hansen, E. Jul, C. Limpach, I. Pratt, and A. Warfield, [2005] "Live migration of virtual machines" In Proc. Of NSDI'05, pages 273-286, Berkeley CA, USA, 2005. USENIX Assiciation.
3. Elinor Mills, January 27,2009. "Cloud computing security forecast: clear skies".
4. Eucalyptus Completes Amazon Web Services Specs with Latest Release.
5. Gartner. "Seven cloud-computing security risks". http://www.infoworld.com July 02,2008.
6. Greg Boss, Padma Malladi, Dennis Quan, Linda Legregni, Harold Hall, "Cloud Computing", IBM Paper, October, 2007.
7. Ian Foster and Yong Zhao,"Cloud Computing and Grid Computing 360-Degree Compared," Grid Computing Environments Workshop, 2008. GCE '08, Nov.2008,pp.l-10,doi: 10.1109/GCE.2008A738445.
8. J. Weinman, "The Future of Cloud Computing", Proceedings of 2011 IEEE Technology Time Machine Symposium on Technologies Beyond 2020, June, 2011, pp. 1-2.
9. Jack Schofield. Wednesday 17 June 2009 22.00 BST, http://www.guardian.co.uk/technology/2009/jun/17/cloud-computingjack- schofield.
10. Jianchun Jiang, Weiping Wen, "Information security issues in cloud computing environment", Netinfo Security,doi:10.3969/j.issn.1671-1122.2010.02.026.
11. July 27,2009. Available from http://fx.caixun.com/.
12. June 13,2009, http://server.zol.com.cn/183/1830464.html.
13. Li Chunlan and Deng Zhonghua,"On the Value of Cloud Computing," Library and Information,NoA,2009,ppA2-46,doi:1003-6938(2009)04-0042-06.
14. M. Pokharel, YoungHyun Yoon, Jong Sou Park, "Cloud Computing in System Architecture", Proceedings of IEEE International Symposium on Computer Network and Multimedia Technology, 2009, pp. 1-5.
15. Manish Pokharel, YoungHyun Yoon, Jong Sou Park, "Cloud Computing in System Architecture", 2009 IEEE. [11]Junjie Peng, Xuejun Zhang, Zhou Lei, Bofeng Zhang, Wu Zhang, Qing Li,"Comparison of Several Cloud Computing Platforms", 2009 IEEE.
16. [Online: January, 2012] Searchcloudcomputing, What is Cloud Computing?; http://searchcloudcomputing.techtarget.com/definition/cloud-computing
17. Open Cloud Consortium.org.
18. R. Mikkilineni, V. Sarathy, "Cloud Computing and the Lessons from the Past", Proceedings of 18th IEEE International Workshops on Enabling Technologies: Infrastructures for Collaborative Enterprises (WETICE'09), 2009, pp. 57-62.
19. Tharam Dillon, Chen Wu, Elizabeth Chang, 2010 24th IEEE International Conference on Advanced Information Networking and Applications ,"Cloud computing: issues and challenges".
20. Vaquero L M, Rodero-Merino L and Caceres J, "A break in the clouds:Towards a cloud definition ,"ACM SIGCOMM Computer Communication Review, vo1.39, Jan.2009,pp:50-55,doi:10.1145/1496091.1496100.
21. Zhang Yaoxue and Zhou Yuezhi, "A New Cloud Operating System: Design and Implementation Based on Transparent Computing," Acta Electronica Sinica, Vo1.29,May.2011,pp.985- 990,doi :0372-2112(20 11)05-0985-06.

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