

A Comparison between Cloud Computing and Grid Computing

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Abstract- Cloud computing is a very fast growing technology which has many benefits over conventional computing. Cloud computing can be thought as a higher level of grid computing. In cloud computing most things are similar to grid computing. Most of the people think that cloud is very much different technology from grid computing but it is not like that. The idea and techniques used in cloud computing are the same as used in grid computing. In this paper I will compare the cloud computing with the grid computing.

Keywords- cloud, grid, computing, service

I. INTRODUCTION

Cloud computing and grid computing share many common characteristics but still they have some differences. In this paper I will try to find similarity as well as differences between cloud computing and grid computing. In cloud computing computer resources such as computer hardware, software, networks, database and computing time are provided on pay per uses basis to the cloud users while In grid computing two or more computers are combined together to solve a complicated problem. In grid computing distributed networks can be combines to solve big computing problem. In cloud computing the cloud user do not have direct access to cloud resources instead cloud resources are provided in form of services while in grid computing the grid user can directly access the resources used in that grid.

II. CLOUD COMPUTING

Cloud computing is a technique or model in which all computer resources are made available to the user on pay per use basis. A cloud user can buy any computer resource as per his/her requirement for limited period of times. The cloud users can pay only how much resources are consumed by them and for how much time they have used them. Cloud can be deployed differently as per requirement. The cloud deployment model can be categorized as private cloud, public cloud, community cloud and hybrid cloud. There are various services which are provided on cloud by cloud service provider such as Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS), Network as a Service, Security as a Service (SaaS) etc.

A. Cloud Deployment Models-

- *Public cloud-*
A public cloud is design in such a way that it is always available for public to meet their service demands. Anyone can buy cloud resources from this type of cloud.
- *Private cloud-*
A private cloud is designed for a specific organization to meet its requirements. In private cloud only the person of that organization can use private cloud and avail services available on private cloud.
- *Community cloud-*
A community cloud is designed for a specific community such as musician, player, scholars etc.
- *Hybrid cloud-*
A hybrid cloud is combination of two or more clouds. The participants of this cloud may private cloud, public cloud or community cloud.

B. Cloud Service Model-

- *Software as a Service (SaaS)-*

The application softwares are provided to the cloud user as a service in Software as a Service (SaaS). The cloud users buy the applications or softwares as per their requirements through this service model.

- *Platform as a Service (PaaS)*-
In these types of service model, platform is provided to cloud users so that cloud users can install and run their softwares on that platform.
- *Infrastructure as a Service (IaaS)*-
In this type of service model infrastructure is provided to the cloud users so that the cloud users can use cloud's infrastructure. The cloud infrastructure includes processing power, network, storage etc.

III. GRID COMPUTING

Grid computing is a technique in which two or more than two computer resources are work together to solve a single problem. Grid computing is based on distributed computer system. A large problem is divided into pieces and there pieces are distributed to different computers to solve them simultaneously. Main Character tics of grid computing are as follows:

- *Large scale*-
A grid must be able to deal with a number of resources ranging from just a few to millions. This gives a challenge to avoid potential performance degradation as the grid size increases.
- *Geographical distribution*-
The various resources which are participating in forming grid may be located at distant places.
- *Heterogeneity*-
A grid contains both software and hardware resources such as data, files, software components or programs to sensors, scientific instruments, display devices, personal digital organizers, computers, super-computers and networks.
- *Resource sharing*-
Resource sharing is an important feature of grid computing. Resources in a grid can belong to many different organizations. Thus, different resources can be used by grid users which promoting efficiency and reducing costs.
- *Multiple administrations*-
Each organization participating in a particular grid may establish different security and administrative policies under which their owned resources. As a result, the already challenging network security problem is complicated even more with the need of taking into account all different policies.
- *Resource coordination*-
A proper coordination should be established among various resources to work efficiently and properly.
- *Transparent access*-
A grid should be seen as a single virtual computer from outside to the grid user.
- *Dependable access*-
A grid must assure the delivery of services to meet established Quality of Service requirements. The need for dependable service is fundamental since users require assurances that they will receive predictable, sustained and often high levels of performance.
- *Consistent access*-
A grid must be built with standard services, protocols and inter-faces thus hiding the heterogeneity of the resources while allowing its scalability. Such standards makes possible things like application development and pervasive use.
- *Pervasive access*-
The grid must provide access to available resources by adapting to a dynamic environment and avoid resource failure. This does not imply that resources are everywhere or universally available but that the grid must tailor its behavior as to extract the maximum performance from the available re-sources.

IV.CONCLUSION

In this paper a comparison is between cloud computing and grid computing is presented. In cloud computing resources are available all the time on demand basis while in grid computing pay per use feature is not present. Resource sharing is the main features in both computing which reduces cost in both computing. Internet is the main medium to deliver cloud service while in grid computing a local network may be used. Cloud computing is more elastic compare to grid computing. Transparency in cloud computing is high while transparency in grid computing is low. The security in cloud computing is higher than grid computing.

REFERENCES

- [1] H. AlHakami, H. Aldabbas, and T. Alwada “Comparison between cloud and grid computing: review paper”,International Journal on Cloud Computing: Services and Architecture (IJCCSA),Vol.2, No.4, August 2012.
- [2] S. M. Hashemi, A. K. Bardsiri “Cloud Computing Vs. Grid Computing”, ARPN Journal of Systems and Software, vol. 2, no.5, may 2012
- [3] R. L. Krutz and R. D. Vines, “Cloud Security: A Comprehensive Guide to Secure Cloud Computing”, Wiley Publishing, 2010
- [4] Cloud Computing Security. A Trend Micro White Paper, pp.2-10, May 2010
- [5] B. R. Kandukuri, et al., “Cloud Security Issues”: IEEE International Conference on Services computing, 2009