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OpenStack driving cloud computing transformation

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Abstract:

OpenStack has proven to be a successful, scalable open source cloud operating system that is a global Collaboration of research and development industry and cloud computing technologists producing the worldwide open source cloud computing platform for public and private clouds. This paper gives brief information about Openstack architecture design and requirements and the services provided by the OpenStack cloud also to visualize the importance of OpenStack framework and the management of virtualization, it also gives the idea of transformation in the IT industry and how small scale IT industries have been transformed to giant organization in the past few years.

I. INTRODUCTION

Cloud computing is revolutionary concept in IT industry and changes the way of viewing the IT resources of an organisation. Open Stack provides open source platform that can be utilised by organisation, corporation and any person who wants to deploy a cloud. Open Stack allows users to deploy virtual machines (VMs). As Open Stack is open source, which means any person can use the source code, make changes as they want and can share the resources and changes made in it

CLOUD COMPUTING

Cloud computing is an internet based computing and relatively a new concept where the resources are dynamically extended it also visualized as well as it provides a service on the Internet

It has three categories, 1) Iaas - Information as service – which helps in virtualization and creates infrastructure and layout instances and install your operating system,

2) Paas – Platform as service – It provides platform in order to develop the application

3) Saas – Software as service - It gives you storage area for data like g-mail and google drive. The modern cloud computing has acquired its fundamentals from several other computing areas and system engineering concept like Grid, Virtualization, MapReduce these are the examples of programming models that indicate an easy way to develop data-intensive application for large distributed systems. Cloud computing has 5 layers cloud applications, software environment, software infrastructure, Software kernel and hardware.

OPEN STACK

Open Stack is a fusion of open source mechanism that is used pooled virtual resources to build and regulate private and public clouds. Instead of running on each end users computer, the end users use the cloud in a remote environment where the software runs on reliable and scalable servers as a service it comes in the categories of Iaas, It provides explanation about the cloud how it is managed and stored in the cloud. An open source cloud software was launched by Rackspace Hosting and NASA known as Openstack in july 2010 and Rackspace decided to disperse object storage product.. Ubuntu Linux distribution acquire Openstack. It gives you all the components to set up cloud infrastructure and also set of tools and service.

There are seven components of Open Stack

1) Nova (Computing): It is basic computing engine responsible in Open Stack. Virtual machines and other instances are deployed and managed by a large number [**1**]. 2) Swift (Object Storage): Objects and files are stored in swift as it is a storage system. Accessing files made easy with the help of

unique identifiers that refer to file or piece of information and lets Open Stack decide where to store this information [**1**]. 3) Cinder (Block Storage): Cinder is a lump storage component, it acts like an external hard drive and or like an USB. 4) Neutron (Networking): Neutron which is formally called as Quantum is a networking component which provides software defined networking stack for Open Stack. 5) **Horizon** (Dashboard): Horizon acts as dashboard for OpenStack and it is a graphical interface to Openstack. This is the first component where user tries to interact. All the components of Openstack can be accessed individually via API but via horizon dashboard administrators can monitor the cloud and manage. 6) **Glance** (Image Services): It is the image record where it stores and manages images (Virtual copies) and it allows the images which can be used as templates to deploy the virtual machines instances [**2**]. 7) **Ceilometer** (Telemetry): It is measuring service, when the user access the cloud it provides the billing services and also keeps the count of services and resources accessed by the user [**1**]. 8) **Heat** (Orchestration): Heat is a utility orchestration of Openstack, to store the requirements of a cloud application in a file which helps developers to store the necessary information to manage the infrastructure for a cloud services to run [**3**].

It is open source and you will get it for free and it is also the future of cloud computing. In the year July 2010 NASA and Rack space Hosting together launched an open source cloud software which is called as Open Stack[10]. It provides both public as well as private cloud where the services and resources are accessed [**4**].

Cloud computing driving transformations

Now a days cloud services are rapidly growing and the speed at which things are changing in large organisation that can no longer remain successful because of the reputation and marketing leadership, but even small start-ups and medium-size has brought transformation in the cloud services [**5**]. It provides module a self-service portal to entrance the importance resources which is on demand. With Openstack enterprise has greatly reduced the provisioning over the time period [**6**].

Openstack provides portability for application among private and public clouds which helps the enterprise to select the perfect cloud for their application and workflow without any interruption of other vendor [**5**]. Major IT vendors contribute to Openstack including the significant Linux distribution, Virtualization hyper-visor and public and private cloud provider and storage networking vendors [**6**]. Any environment can be built with strong community and trading support [**7**]. Openstack is also used in E-commerce and one of the examples is Walmart, it has deployed one of the largest Openstack [**8**]. To monitor utilities of Openstack open source monitoring tools are used. We have several companies who have deployed Openstack to provide the resources to the clients and have brought transformation in Openstack by providing the fastest speed and user friendly environment, companies like nebula, cloud scaling, Rack space hosting and piston gives different services to the clients. As it is cost efficient and robust most of the small as well as large organisation wants to acquire Openstack for faster access.

II. CONCLUSIONS

Openstack cloud storage system have been broadly utilised. In this paper, we discuss about what is Openstack and how Openstack has been a transformation for small scale and large scale industries

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