Cloud Computing – An Overview

Cloud Computing

Cloud computing is Internet-based utility computing, basically shared resources, software, and information that are used by end-users hosted on virtual servers. Personal computing has evolved in three phases. The first phase was where the data and application were stored on a local desktop. The second phase is where the applications reside on a local server and utility software on the desktop along with the internet to provide valuable information. The third phase is where most of the data and software will reside somewhere on the internet. This phase is identified as cloud computing. It is a new concept in the field of information technology still trying to get acceptance, where-in technological services/ applications are provided by a third-party.

Cloud Computing – Nomenclature

The applications/softwares are provided as services that reside in data centers with server farms and redundant storage. End-users can access them via web browsers on laptops or hand-held devices. Google Apps, Facebook, and salesforce.com are examples of cloud computing that are becoming very popular especially with the younger generations. A very basic example of cloud computing is a web-based email service like Gmail where the complexity of storage and presentation of user data is provided by a third party, and users are leveraging them utilizing web browsers.

Benefits of Cloud Computing

Cloud Computing is a different paradigm of personal as well as corporate computing which drifts away from the traditional software business model. There are several positive factors for deciding in favor of moving to cloud computing. Some of the important favorable factors are discussed below. Entry cost for a business to set itself up in the cloud is much less compared to a traditional setup. The cost of running an Information Technology (IT) business in the cloud world can be visualized as an operational cost. Organizations no longer need to shell out big amounts for hardware, software upgrades, and licenses. They no longer need to worry about the end of life for hardware/software. Companies no longer need to spend huge amounts on buying new hardware for scalability. In short, infrastructure costs to get into the cloud are much lower than those for the traditional model. Pricing is generally based on usage options. Organizations do not need to maintain a workforce of IT people and can focus on strengthening their business domain knowledge.

Organizations can use only applications which are suited for their need and not pay huge amounts on licenses for using a software suite. With canned applications in the cloud, a business can decide and pay for only the applications that they need. Using virtualization as the main technology, additional computing resources can be added dynamically without having any downtime. By monitoring peak load and server usage, an application can be dynamically switched over to a virtual machine with greater computing speed or the current virtual machine can be augmented with more computing resources. The organization using the application does not need to pay extra for the scalability feature. In virtualization, high-performance servers are split into multiple machines catering to different customers.

Cloud Computing Models

Cloud Providers offer services that can be grouped into three categories.

Software as a Service (SaaS): In this model, a complete application is offered to the customer, as a service on demand. A single instance of the service runs on the cloud & multiple end users are serviced. On the customers" side, there is no need for upfront investment in servers or software licenses, while for the provider, the costs are lowered, since only a single application needs to be hosted & maintained. Today SaaS is offered by companies such as Google, Microsoft, Zoho, etc.

Platform as a Service (Paas): Here, a layer of software, or development environment is encapsulated & offered as a service, upon which other higher levels of service can be built. The customer has the freedom to build his applications, which run on the provider's infrastructure. To meet manageability and scalability requirements of the applications, PaaS providers offer a predefined combination of OS and application servers, such as the LAMP platform (Linux, Apache, MySql, and PHP), restricted J2EE, Ruby, etc. Google's App Engine, Force.com, etc are some of the popular PaaS examples.

Infrastructure as a Service (Iaas): IaaS provides basic storage and computing capabilities as standardized services over the network. Servers, storage systems, networking equipment, data center space, etc. are pooled and made available to handle workloads. The customer would typically deploy his software on the infrastructure. Some common examples are Amazon, Flipkart, etc.

Concerns with Cloud Computing

As there is darkness after light similarly with the benefits discussed in the earlier sections a few concerns are floating around with the acceptance and utilization of cloud computing. With the applications provided as service and being used by different customers, personalization seems to be one limitation. There is a serious concern with data being centralized and out of business control. Sensitive data will now be under the control of a third-party and according to some experts this is a compliance issue and some feel that this is probably going to be the end of confidential records management. When it comes to the disclosure policies, some people do not know where to draw the line and knowingly or unknowingly share vital information, and with data out on the third-party space that concern becomes even more critical. With everything accessible through the internet, the business will be dependent on the network and the service provider's infrastructure. A business will come to a halt if the network/ internet is down. With business-sensitive internal data being maintained by the vendor the dependency on the vendor's unique API and proprietary interfaces could create a possible lock-in with the vendor. If under some circumstance the business is dissatisfied with the vendor, moving to a new vendor means data needs to be reformatted and converted which can be time-consuming and expensive.

Conclusion

After having discussed the merits and de-merits it stands out that there is no one clear answer in favor or against cloud computing. So far it seems that is going to be a hybrid solution from the corporate standpoint. Some critical, business-sensitive applications will continue with the traditional business model till the concerns about privacy and legal matters are cleared from cloud computing whereas simple canned applications will become more and more popular in the cloud space. The concept and technology are here to stay but it still in their infancy and there is a long road ahead to get to maturity.