



Cloud Implementation on Security Enhancement for Cloud Computing

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Abstract: Cloud Computing has been envisioned as the next generation architecture of IT Enterprise. In contrast to traditional solutions, where the IT services are under proper physical, logical and personnel controls, Cloud Computing moves the application software and databases to the large data centers, where the management of the data and services may not be fully trustworthy. Cloud computing services are deployed in terms of business models can differ depending on requirements. This paper helps to identifying the problems that need to be solved by each mode, namely (1) cloud Servers, (2) cloud Clients, and (3) cloud database. And also prevent cloud network from public Common network attacks and hackers and makes a secure connection between cloud server and their client ends.

Keywords: Cloud Implementation on Security Enhancement for Cloud Computing, (1) Cloud Servers, (2) Cloud Clients, and (3) cloud database.

I. Introduction

This white paper is an introduction to the terms, characteristics, and services associated with internet-based computing, commonly referred to as cloud computing. Characteristics, such as infrastructure, provisioning, network access, and managed metering are presented. The primary business service models being deployed (such as software, platform, and infrastructure as a service) and common deployment models employed by service providers and users to use and maintain the cloud services (such as the private, public, community, and hybrid clouds) are discussed. Also introduced are the benefits and challenges associated with cloud computing, and for those seeking to use communications services in the cloud, briefly presented are different ways of determining the interfaces needed to use these communications services.

II. Cloud Computing

The term “cloud”, as used in this white paper, appears to have its origins in network diagrams that represented the internet, or various parts of it, as schematic clouds. “Cloud computing” was coined for what happens when applications and services are moved into the internet “cloud.” Cloud computing is not something that suddenly appeared overnight; in some form it may trace back to a time when computer systems remotely time-shared computing resources and applications. More currently though, cloud computing refers to the many different types of services and applications being delivered in the internet cloud, and the fact that, in many cases, the devices used to access these services and applications do not require any special applications. Many companies are delivering services from the cloud. Some notable examples as of 2010 include the following:

- **Google:** It has a private cloud that it uses for delivering many different services to its users, including email access, document applications, text translations, maps, web analytics, and much more.
- **Microsoft:** It has Microsoft® Sharepoint® online service that allows for content and business intelligence tools to be moved into the cloud and Microsoft currently makes its office applications available in a cloud.
- **Salesforce.com:** It runs its application set for its customers in a cloud, and its Force.com and Vmforce.com products provide developers with platforms to build customized cloud services.
- But, what is cloud computing? The following sections note cloud and cloud computing characteristics, services models, deployment models, benefits, and challenges.

III. Characteristics

Cloud computing has a variety of characteristics, with the main ones being:

- **Shared Infrastructure:** It uses a virtualized software model, enabling the sharing of physical services, storage, and networking capabilities. The cloud infrastructure, regardless of deployment model, seeks to make the most of the available infrastructure across a number of users.
- **Dynamic Provisioning:** It allows for the provision of services based on current demand requirements. This is done automatically using software automation, enabling the expansion and contraction of

service capability, as needed. This dynamic scaling needs to be done while maintaining high levels of reliability and security.

- **Network Access:** It needs to be accessed across the internet from a broad range of devices such as PCs, laptops, and mobile devices, using standards-based APIs (for example, ones based on HTTP). Deployments of services in the cloud include everything from using business applications to the latest application on the newest smartphones.
- **Managed Metering** — Uses metering for managing and optimizing the service and to provide reporting and billing information. In this way, consumers are billed for services according to how much they have actually used during the billing period. In short, cloud computing allows for the sharing and scalable deployment of services, as needed, from almost any location, and for which the customer can be billed based on actual usage.

IV. Five Essential Characteristics

- (a) **On-demand self service:** Users are able to provision, monitor and manage computing resources as needed without the help of human administrators.
- (b) **Broad network access:** Computing services are delivered over standard networks and heterogeneous devices.
- (c) **Rapid elasticity:** IT resources are able to scale out and in quickly and on an as needed basis .
- (d) **Resource pooling:** IT resources are shared across multiple applications and tenants in a non-dedicated manner.
- (e) **Measured service:** IT resource utilization is tracked for each application and tenant, typically for public cloud billing or private cloud chargeback.

V. Service Models

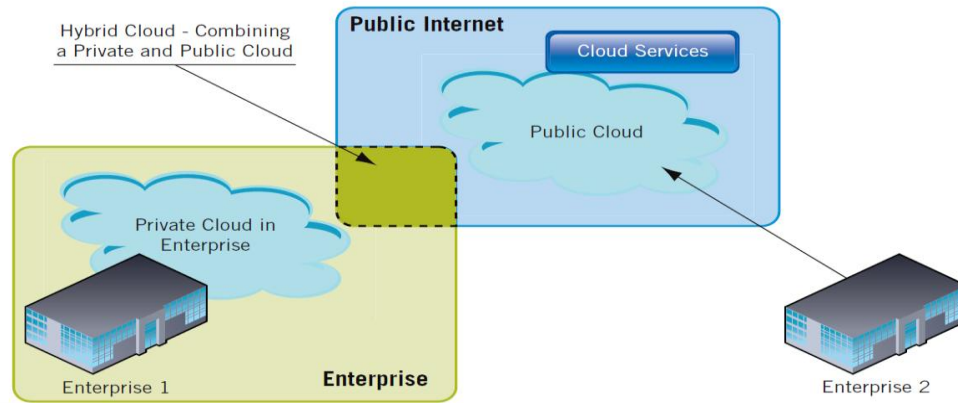
Once a cloud is established, how its cloud computing services are deployed in terms of business models can differ depending on requirements. The primary service models being deployed are commonly known as:

- (a) **Software as a Service (SaaS):** Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud. Also, Microsoft is expanding its involvement in this area, and as part of the cloud computing option for Microsoft® Office 2010, its Office Web Apps are available to Office volume licensing customers and Office Web App subscriptions through its cloud-based Online Services.
- (b) **Platform as a Service (PaaS):** Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed.
- (c) **Infrastructure as a Service (IaaS):** Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but do not themselves control the cloud infrastructure.

VI. Deployment Models

Deploying cloud computing can differ depending on requirements, and the following four deployment models have been identified, each with specific characteristics that support the needs of the services and users of the clouds in particular ways.

- **Private Cloud:** The cloud infrastructure has been deployed, and is maintained and operated for a specific organization. The operation may be in-house or with a third party on the premises.
- **Community Cloud:** The cloud infrastructure is shared among a number of organizations with similar interests and requirements. This may help limit the capital expenditure costs for its establishment as the costs are shared among the organizations. The operation may be in-house or with a third party on the premises.
- **Public Cloud:** The cloud infrastructure is available to the public on a commercial basis by a cloud service provider. This enables a consumer to develop and deploy a service in the cloud with very little financial outlay compared to the capital expenditure requirements normally associated with other deployment options.
- **Hybrid Cloud:** The cloud infrastructure consists of a number of clouds of any type, but the clouds have the ability through their interfaces to allow data and/or applications to be moved from one cloud to another. This can be a combination of private and public clouds that support the requirement to retain some data in an organization, and also the need to offer services in the cloud.



VII. Benefits of Cloud Computing

The following are some of the possible benefits for those who offer cloud computing-based services and applications:

- **Cost Savings:** Companies can reduce their capital expenditures and use operational expenditures for increasing their computing capabilities. This is a lower barrier to entry and also requires fewer in-house IT resources to provide system support.
- **Scalability/Flexibility:** Companies can start with a small deployment and grow to a large deployment fairly rapidly, and then scale back if necessary. Also, the flexibility of cloud computing allows companies to use extra resources at peak times, enabling them to satisfy consumer demands.
- **Reliability:** Services using multiple redundant sites can support business continuity and disaster recovery.
- **Maintenance:** Cloud service providers do the system maintenance, and access is through APIs that do not require application installations onto PCs, thus further reducing maintenance requirements.
- **Mobile Accessible:** Mobile workers have increased productivity due to systems accessible in an infrastructure available from anywhere.

VIII. Implementation Area

For cloud security we can use windows server 2008 with database controlling for cloud clients and servers we can use some of services as cloud server in windows server 2008 and can use file zilla tools to create session between cloud server and client both. We can make some of user accounts for providing cloud services through file zilla tool from server to client and client can send and receive files from cloud server by using file zilla tools for making connection client needs user ID and password from cloud server and cloud data base port number and then client can use cloud server and its database services.

IX. Challenges in Cloud Computing

The following are some of the notable challenges associated with cloud computing, and although some of these may cause a slowdown when delivering more services in the cloud, most also can provide opportunities, if resolved with due care and attention in the planning stages.

- **Security and Privacy:** Perhaps two of the more “hot button” issues surrounding cloud computing relate to storing and securing data, and monitoring the use of the cloud by the service providers. These issues are generally attributed to slowing the deployment of cloud services. These challenges can be addressed, for example, by storing the information internal to the organization, but allowing it to be used in the cloud. For this to occur, though, the security mechanisms between organization and the cloud need to be robust and a Hybrid cloud could support such a deployment.
- **Lack of Standards:** Clouds have documented interfaces; however, no standards are associated with these, and thus it is unlikely that most clouds will be interoperable. The Open Grid Forum is developing an Open Cloud Computing Interface to resolve this issue and the Open Cloud Consortium is working on cloud computing standards and practices. The findings of these groups will need to mature, but it is not known whether they will address the needs of the people deploying the services and the specific interfaces these services need. However, keeping up to date on the latest standards as they evolve will allow them to be leveraged, if applicable.
- **Continuously Evolving:** User requirements are continuously evolving, as are the requirements for interfaces, networking, and storage. This means that a “cloud,” especially a public one, does not remain static and is also continuously evolving.

- **Compliance Concerns:** The Sarbanes-Oxley Act (SOX) in the US and Data Protection directives in the EU are just two among many compliance issues affecting cloud computing, based on the type of data and application for which the cloud is being used. The EU has a legislative backing for data protection across all member states, but in the US data protection is different and can vary from state to state. As with security and privacy mentioned previously, these typically result in Hybrid cloud deployment with one cloud storing the data internal to the organization.

X. Conclusion

As cloud computing is becoming popular day by day, concerns are about the security issues introduced through adoption of this new techniques and model. Cloud computing offers many benefits, but it also gives a chance to threats and data robbers. According to delivery services and its models, essential features of the cloud computing are SaaS, PaaS, and IaaS, data security is the prime aspect of cloud computing. Cloud storage is a service in which data is maintained, managed and backed up remotely and made available to users everywhere. There are three types of main problems in Cloud Computing, including Data Storage Security, flexibility and mobility. In this paper we discussed on cloud establishment, enhancement and data security in cloud network which is very essential for cloud servers, cloud clients and cloud database. The main goal is to securely store and manage data. To ensure the correctness of users' data in cloud data storage, and correctness of users who can access to the cloud server, we proposed an effective and flexible distributed scheme with some security techniques.

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