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Survey of Cloud Computing System & its Functionality

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Abstract-This Paper discuss various aspects of cloud computing. Firstly, it introduce cloud computing phenomenon. Then, it focus that on Shape and Model the Cloud Computing in the areas: infrastructure model, architectural layer of cloud computing, software cloud and application cloud. Afterwards we will conclude the cloud computing topic and references from various sites are also available.

(I) Introduction

The shift from locally installed programs to cloud computing is just getting under way in earnest. Shrink-wrap software still dominates the market and is not about to disappear, but the focus of innovation indeed seems to be ascending into the clouds. Some substantial fraction of computing activity is migrating away from the desktop and the corporate server room. The change will affect all levels of the computation a ecosystem, from casual user to software developer, IT manager, even hardware manufacturer. Cloud computing is a term used to describe both a platform and type of application. A cloud computing platform dynamically provisions, configures, reconfigures, and deprivations servers as needed. Servers in the cloud can be physical machines or virtual machines. Advanced clouds typically include other computing resources such as storage area networks (SANs), network equipment, firewall and other security devices.

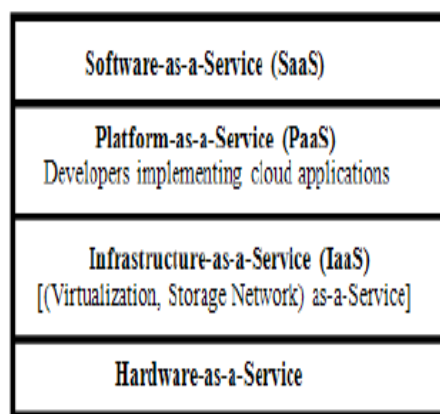


Figure 1. Cloud Layered Architecture

Shape and Model of Cloud Computing.

To Shape and Model the Cloud Computing the underlying areas are as follow:

- *Cloud Computing Infrastructure Models*

DEPLOYMENT MODELS

Public Cloud Private Cloud Hybrid Cloud

Public clouds are run by third parties, and applications from different customers are likely to be mixed together on the cloud's servers, storage systems, and networks. Public clouds are most often hosted away from customer premises, and they provide a way to reduce customer risk and cost by providing a flexible, even temporary extension to enterprise infrastructure.

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DEPLOYMENT MODELS

Public Cloud Private Cloud Hybrid Cloud

Private clouds are built for the exclusive use of one client, providing the utmost control over data, security, and quality of service. The company owns the infrastructure and has control over how applications are deployed on it. Private clouds may be deployed in an enterprise datacenter, and they also may be deployed at a co-location facility.

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DEPLOYMENT MODELS

Public Cloud Private Cloud Hybrid Cloud

Hybrid clouds combine both public and private cloud models. They can help to provide on-demand, externally provisioned scale. The ability to augment a private cloud with the resources of a public cloud can be used to maintain service levels in the face of rapid workload fluctuations. A hybrid cloud also can be used to handle planned workload spikes. Sometimes called "surge computing," a public cloud can be used to perform periodic tasks that can be deployed easily on a public cloud.

➤ **Architectural Layers of Cloud Computing**

Software as a service (SaaS)

Software as a service features a complete application offered as a service on demand. A single instance of the software runs on the cloud and services multiple end users or client organizations.

Platform as a service (PaaS)

Platform as a service encapsulates a layer of software and provides it as a service that can be used to build higher-level services. Someone might produce a platform by integrating an OS, middleware, application software and even a development environment that is then provided to a customer as a service. Someone would see an encapsulated service that is presented to them through an API. The customer interacts with the platform through the API, and the platform does what is necessary to manage and scale itself to provide a given level of service.

Infrastructure as a service (IaaS)

Infrastructure as a service delivers basic storage and compute capabilities as standardized services over the network. Servers, storage systems, switches, routers, and other systems are pooled and made available to handle workloads that range from application components to high-performance computing applications.

Security on demand

Cloud services are applications running somewhere in the Cloud Computing infrastructures through internal network or Internet. For users, they don't know or care about the data where to be stored or services where to be provided. Cloud computing allows providers to develop, deploy and run applications that can easily grow in capacity (scalability), work rapidly (performance), and never (or at least rarely) fail (reliability), without any concerns on the properties and the locations of the underlying infrastructures.

➤ **Software Cloud**

Cloud computing has rapidly become a new computing paradigm of great interest to the software practitioner community. A number of providers of cloud computing platforms now offer "computing, data storage, and communication services for hire" models. Instead of maintaining their own hardware and network infrastructures, providers of software-as-a-service rent resources on such cloud platforms, from which they provide services to their consumers. These service providers may rent more capacity, or free up unused capacity, as customer demand dictates. The potential benefits of this approach to service delivery include reduced complexity, a focus on the core business (software service delivery vs. platforms), a rental model for platform capabilities (versus buying and maintaining), and an increase in business agility due to the platform provider's capabilities (for example, pay-per-use, service integration, systems security, and hardware and operating system maintenance). Many open issues remain. Articles should address challenging, outstanding issues in the engineering of software applications for cloud platforms. These include the following:

- Quality-of-service engineering (performance, reliability, availability, etc.) and certification for cloud applications based on cloud platforms
- Portability and standardization of cloud services
- Cloud security and privacy including multi-tenant issues
 - Challenges in migration of existing on-premise applications to cloud platforms
- New business models leveraging business agility for cloud-hosted services
- New software architecting, design, or testing approaches for cloud-hosted services
- New development methods and tools for engineering cloud services

➤ **Application Cloud**

Cloud computing has range of applications. Different providers provide different applications:

- Integration (Amazon Simple Queue Service)
- Payments (Amazon Flexible Payments Service, Google Checkout, PayPal)
- Mapping (Google Maps, Yahoo! Maps, MapQuest)

- Search (Alexa, Google Custom Search, Yahoo! BOSS)
- Video Games (OnLive, Gaikai)
- Live chat (LivePerson)
- Businesses are running all kinds of apps in the cloud these days, like CRM, HR, accounting, and custom-built apps.

(II) Conclusion

Although cloud computing enables products, service and solutions instantly to the customers but it is still not very developed because most, if not all small businesses today, do not have the capability of building an infrastructure that will support cloud computing. The required funds to build data centers that could support each other, not to mention the manpower support are not enough Internet giants such as Google and Amazon have the capability to offer highly extensive cloud computing support. Smaller companies based in the same area of the client also exist. Although they provide limited services to their clients, their capacity is more than enough for most small business needs. But even with this form of spending, the success of cloud computing is not even assured. This is because of privacy and security issues. One way is to use authentication techniques such as user names and passwords. Another is to employ an authorization format -- each user can access only the data and applications relevant to his or her job. Keeping all this in consideration, it can be said that the application development for cloud computing would take time and considerable resources.

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