

Cloud Computing Services and Its Applications in Arab Environment

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Abstract:

This paper aims to introduce the concept of Cloud Computing and to identify its components and characteristics as well as finding its advantages and types, as well as the security of Cloud Computing for customers, and also the paper will discuss the challenges that may face application of Cloud Computing in the Arab environment and future trends of Cloud Computing in application the Arab environment.

Key words: *Cloud computing, Cloud Computing applications, applications in Arab environment*

I. Introduction

The world is moving very quickly, the Arab environments advancing for the reception of these techniques and follow-up and care to identify it first hand, as we observe what was being done in the weeks became accomplished few hours, by virtue of the utilizing the modern channels of communication and the Web networks, the world did not only make the Web network as mean of communication or to share simple information, but the Web network has evolved into a very large store contains a lot of information that has become easy to access at anytime and from any place which is now called Cloud Computing.

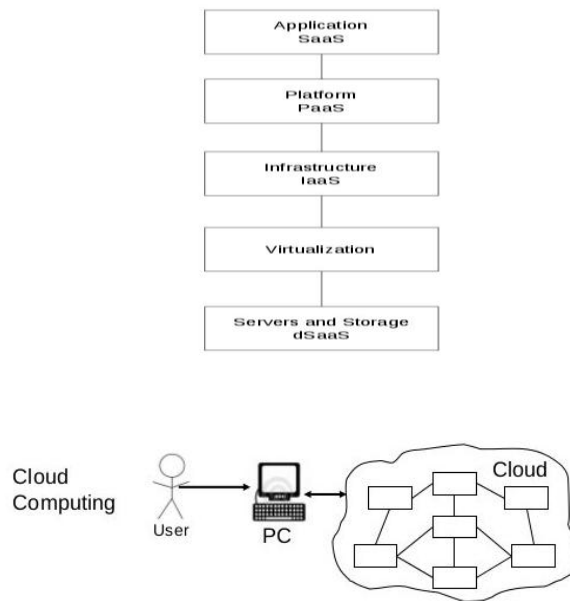
The Concept of Cloud Computing

Many governments, institutions and companies are using computer resources to store data or to interact with its applications or to develop whereby but the disadvantages of these servers its ongoing need for maintenance and it should be exist in a specific location as well as its limited storage capacity that constrain the organization to remove the old data to make place for the institution modern data. Out of these and other problems emerged the concept of Cloud Computing, which mean sources and computer systems available on demand through the network, which can provide a number of integrated computing services without being bound by the local resources in order to make it easier for the users, those resources including space for data storage and back up and self-synchronization, also it is include capabilities of software processing, scheduling of tasks, e-mail payment and remote printing, when connected to the network, the user can control these resources through a simple software interface.

Layers of cloud Computing

Usually it includes Cloud Computing services on several layers, namely:

- IT services which is referred to as SaaS (Service Program), which allows users to run applications remotely through Cloud services.
- Infrastructure as a (IaaS) service and refers to the computing resources as a service. This includes the virtual computers with secured processing power with data transfer rate that reserved for the storage and Internet accessing.
- Platform as a (PaaS) service which is similar to the IaaS, but it is include operating and services systems which required or a particular application. In other words, PaaS is IaaS with a package of applications customized for particular software.
- Data storage as a service (dSaaS) provides storage space used by the consumer, including data transfer rate of storage requirements.



Types of Cloud Computing

There are three types of Cloud Computing:

- Public cloud:

In this type of Clouds providing computing resources dynamically over the Internet through Web applications or Web services provided by off-site third-party. The public Cloud operating by the three parties, different customers likely to be mixed together on the Cloud servers, storage systems and networking applications.

- Private Cloud:

This type of Clouds refers to Cloud Computing on private networks, the private Clouds built for exclusive use of one client, providing complete control over data, security, and quality of service. The private Clouds can be built and managed by the IT department in a some company or by a Cloud services provider.

- Hybrid cloud:

In this type of Clouds Computing public and private Cloud model been collected, so this Cloud should be allocated to particular client and the Cloud are managed by the technical department in the company, at the same time allow access to certain information by users outside the company.

Basic features of Cloud services

We can summarize the key features of Cloud services in the table below:

Features	Description
Infrastructure systems	Include servers, storage units, and networks that can be expanded by the user's request.
Software Application	Provides Web-based user interface, Web services for APIs and wide range of configurations.
Developing and Deploying Applications Program	Supports the development and integration of cloud application software.
System Management and Applications Program	Supports the provision of fast self-service configuration and usage monitoring.
IP Networks	Links final users with the cloud and infrastructure components.

Characteristics of Cloud Computing

Cloud Computing provide a number of new features, including:

-Capability for developing and provide on-demand services: Cloud Computing provide resources and services to users on demand, as there sources are capable for developing through multiple data centers.

-An interface based on the user: the facades of the Cloud considered as an in dependent site can be accessed through well-established interfaces such as Web services and Internet browsers.

-Quality Assurance Service (Qos): Cloud Computing can ensure quality of service for users in terms of the performance of the hardware/CPU, and display the data transfer rate, and memory capacity.

-Self-control System: The Cloud Computing systems are independent systems managed transparently for users, however, the programs and data within the Cloud Computing can be re-configured and automatically integrated in to a simple platform depending on the user's needs.

-Price: Cloud Computing does not require significant funding; there is no need for a capital expenditure, where users can pay for the services and capacity as needed.

Cloud Computing Security

In traditional data centers, the general approach to security includes firewall, subject to security management zones, network dividing, intrusion detection, prevention systems, and network monitoring tools. The security requirements of Cloud Computing providers start with the same methods and tools found in traditional data centers, which include the application of strong security perimeter of the network. However, the physical segmentation and security which is based upon devices cannot protect against attacks between virtual machines on the same servers. As the Cloud Computing using the same operating systems, Enterprise applications and Web sites such as the specific-site virtual devices and the physical servers. Therefore, an attacker can exploit vulnerabilities remotely in these systems and applications. In addition to that, the participation of the site between numbers of multiple virtual machines increases the attack surface and exposing the dangers of virtual machines. The intrusion detection and prevention systems must be able to detect the harmful activities in the virtual hardware level, regardless of the location of the virtual machine within the Cloud environment.

In a nut shell, the virtual environments that install security mechanisms on virtual devices, including firewalls, intrusion detection, prevention, safety monitoring and records inspection, will make the virtual machines Clouds safe in effective way and ready for distributing.

Application of Cloud Computing challenges in the Arab Environment

-Infrastructures: as many Arab countries still suffer from the lack of readiness of the infrastructures such as modern equipment and techniques, for the application of the Cloud Computing concept.

-Performance: The biggest problem in performance may be for some applications-oriented toward transactions and other intensive data applications, whereas, Cloud Computing may lack the appropriate performance. There mote users from the Cloud providers may face delays and high idle.

-Security and Privacy: companies are still concerned about security when using Cloud Computing. Customers are worried about exposure to the attacks when the important sources and IT information are outside the Fire wall. Solving the security problem assume that Cloud Computing providers follow standard safety practices. The concept penetrate security and privacy still exist in many of the population of the Arab countries, no matter how guarantees given.

-Control: Usually we see that Cloud Computing providers have full authority over the platforms usually do not do design platforms for specific companies and its business practices, but they are all involved in the same platform.

-The cost of data transfer rate: With Cloud Computing, companies can save money wasted on hardware and software, but they can bear higher data transfer rate fees for the network. Low cost data transfer rate may be for small Internet applications, which are not data-intensive, but it could be Raised significantly for applications dense data.

- Accuracy and Reliability: Cloud Computing still does not provide lasting reliability around the clock. Whereas, some cases of Cloud Computing services were suffer from power out for a few hours.

Future direction of Cloud Computing in the Arab Environment

The Cloud Computing is certainly a kind of computing structure models, which will remain available for a long time to come. In the near future, Cloud Computing could emerge in different directions and that will certainly affect the Arab environments and one of the most important possible scenarios is that the institution may use a distributed hybrid Cloud, this means that institutions will become more interested in the development of their technical characteristics and create an environment to be inconsistence with its technical developments. The Foundation will be using basic applications on its private Cloud, while some of the other applications will be distributed to several special Clouds which had been amended for specific applications.

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