



The Ministry for Development of Information Technologies and Communications of the Republic of Uzbekistan

Tashkent University of Information Technologies named after Muhammad al-Khwarizmi

The development of the use of cloud computing and information security

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Cloud computing

is the paradigm of providing network access to a scalable and flexible set of shared physical or virtual resources with the provision and administration of resources based on self-service on demand.

The main characteristics are:

- ❖ Wide network access;
- ❖ Measured service;
- ❖ a mode with many tenants (physical and virtual resources are distributed in such a way that several tenants, their calculations and data are isolated from each other and are inaccessible to each other);
- ❖ self-service on demand;
- ❖ Operational flexibility and scalability;
- ❖ pooling of resources.



Cloud capabilities and service categories:

- ❖ type of application capabilities;
- ❖ type of infrastructure capabilities;
- ❖ type of platform capabilities;
- ❖ communication as a service;
- ❖ Calculation as a service (the ability to provide and use the processing resources necessary for the deployment of software and its operation);
- ❖ data storage as a service;
- ❖ infrastructure as a service;
- ❖ network as a service (transport connections and related network capabilities);
- ❖ platform as a service (providing a platform capability);
- ❖ software as a service (providing an application capability).



Cloud deployment models:

- ❖ public cloud (access services to any consumer);
- ❖ private cloud (cloud services are used exclusively by a single consumer);
- ❖ collective cloud (a specific group of service consumers);
- ❖ Hybrid cloud (uses two or more cloud deployment models);

Hyper-scale cloud – where to get great benefits from the cloud it takes a swing. The scale and even the hyper- scale make it possible to change the basic model of cloud computing on many aspects, it provides an opportunity to invest better, to develop and to work. The hyper-scale provides security enhancement, cost reduction, increased scalability on demand, increased automation of self-service, increased innovation and speed of implementation.

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The essence of cloud computing is the *maneuverability*, the provision of information technology services, cost models and the pace of innovation:



Provision and consumption of services



Models of costs

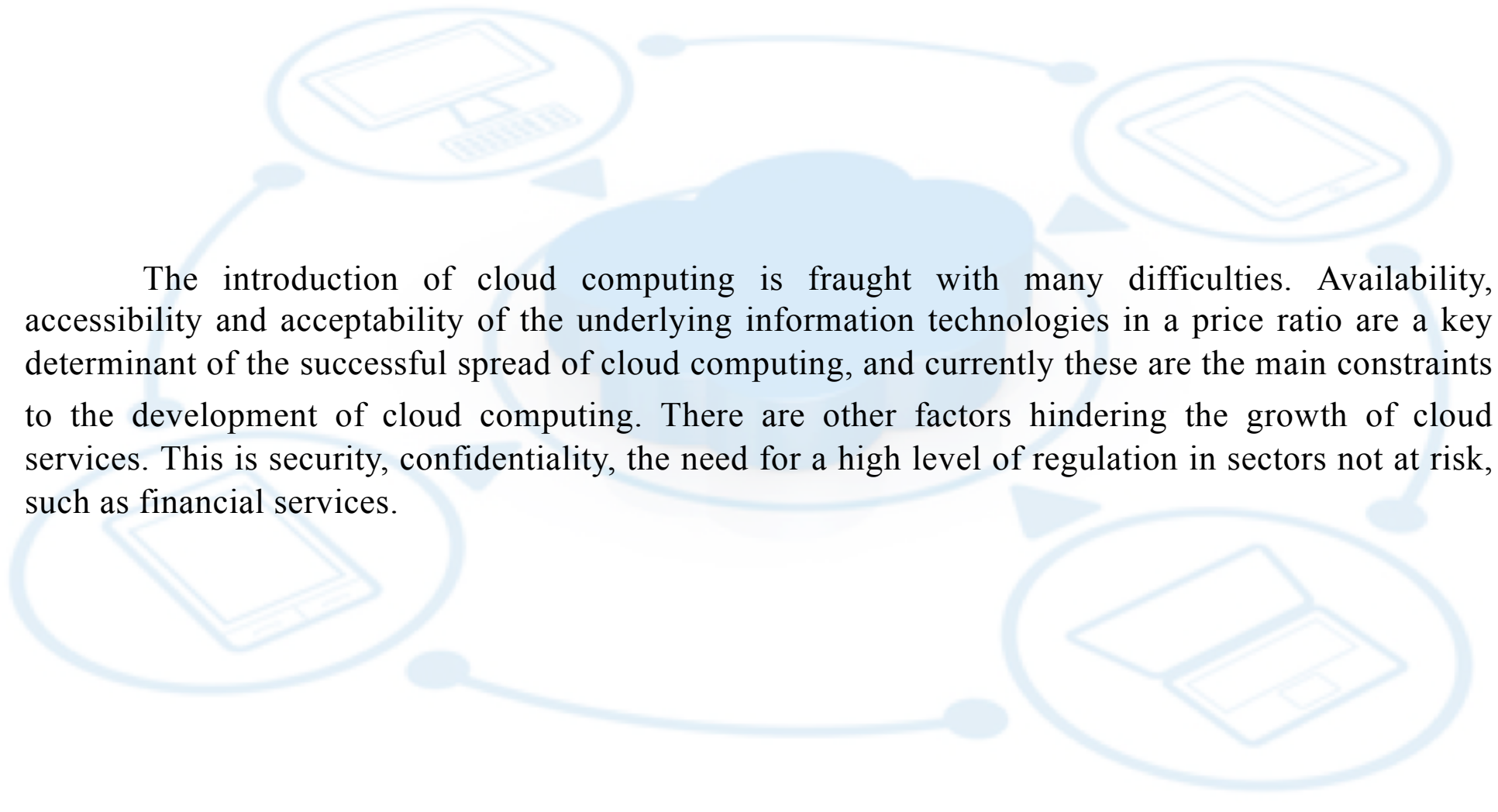


The pace of innovation

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These achievements create unique opportunities for all IT service consumers who:

- ❖ can get access to the latest technologies (cloud innovations are provided in the cloud);
- ❖ Innovations in the cloud are implemented faster than in a single organization;
- ❖ can reduce the cost of IT projects (costs in the cloud are much lower than of any enterprise).



The introduction of cloud computing is fraught with many difficulties. Availability, accessibility and acceptability of the underlying information technologies in a price ratio are a key determinant of the successful spread of cloud computing, and currently these are the main constraints to the development of cloud computing. There are other factors hindering the growth of cloud services. This is security, confidentiality, the need for a high level of regulation in sectors not at risk, such as financial services.



Cloud computing along with other important services also have a security service.

Cloud computing is based on trust, which is established between service users, service providers and regulators. For cloud services, it is often necessary to share common computing resources, as well as remote storage and processing of data (sometimes confidential or personal information), service users must be sure that their data is safe and protected also if they were stored locally and in their own premises. At the same time, regulators should be sure that information about their citizens is treated in accordance with the laws in force in their regions and adopted a set of policy measures to ensure security and confidentiality, in which the cloud is regarded as the main mechanism of relationships. At the same time, cloud service providers need to be sure that they are subject to established policy regimes governing the processing and use of data on their consumers so that they have the interest and incentive to provide their services to consumers.

In development of trustworthy cloud computing services,
the following principles should be followed:

Security and
protection

Confidentiality and
control

Compliance with
regulatory
requirements

Transparency



Therefore, to create a favorable environment for cloud services is very important to promote the establishment of trustworthy relations between these three groups regardless of the boundaries of legal *relationships*, *cultural differences* and *political systems*. Regulatory bodies, cloud service providers and consumers of cloud services have an important role to play in establishing Trust, and only then will cloud computing be widely developed and beneficial to all parties involved.

Taking into consideration abovementioned, it is proposed to:

ITU is advisable to consider the possibility of developing a model Recommendation document named “Model requirements on establishment of Trust relations between the Regulatory Authority, the Cloud Service Provider and the Consumer of Cloud Services“.

The creation of such a Recommendation by the ITU will undoubtedly be a great contribution to accelerating the development of the use of Cloud computing with Big data, with a confident Trust between regulators, suppliers and users of cloud services in developed and especially developing countries.

THANK YOU