CLOUD COMPUTING ASSIGNMENT #1
Above the Clouds: A Berkeley View of Cloud Computing

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Cloud Computing is the use of a network of remote servers hosted on the Internet for the purpose of storage and processing data. This is already available in the networking community as the usage-based pricing. The applications delivered are considered as **Software as a Service (SaaS)** over the Internet and the hardware and software in the data centre is called **Cloud**. A cloud when used in pay-as-you-go manner is referred to as a **Public Cloud** and the service is called **Utility Computing**. When the internal data centres of a business or an organization is not made available to the public is called **Private Cloud**.

From the hardware point of view, the aspects of the illusion of infinite computing resources available on demand, the elimination of an up-front commitment by cloud users and the ability to pay for use of resources on a short term basis is new in Cloud Computing. By the use of Cloud Computing, the software installation and maintenance is made easier for the service providers and the ease of availability of the service for the end users.

There are many new application opportunities by the use of Cloud Computing. A few of them are mobile interactive applications, parallel batch processing and the rise of analytics. A model of computation, storage and communication is necessary for any application. Cloud Computing has the benefit of elasticity, i.e. ability to add or remove the resources as required. To avoid the problem of underutilization, **pay-as-you-go** cloud computing charges the application for each type of resource.

There are number of obstacles in the further growth of Cloud Computing and here are the possible solutions. The problem of **Availability of a Service** can be overcome by ensuring there are multiple Cloud Computing providers. The **Data Lock-In** problem can be solved by standardizing the APIs so that the data is stored across in various data centres. **Surge computing** is also a possible solution. The **Data Confidentiality and Auditability** can be made sure by encrypting the data before it is placed in the cloud. The above three are the obstacles to the **Adoption** of Cloud Computing.

The **Data Transfer Bottleneck** obstacle can be controlled by shipping the disks and reducing the cost of WAN bandwidth. The **Performance** of the system can be improved by the use of flash memory to decrease the I/O interface. The need of a storage system which can **scale up and down** on demand in response to load is still an open research problem. The **Large-Scale Distributed Systems** has the challenge of bugs which can be conquered by the debugger that relies on distributed VMs. The above are the obstacles to the **Growth** of Cloud Computing.

The obstacle to the **Policy** of Cloud Computing is **Reputation Fate Sharing** which can be conquered by offering reputation guarding services. The obstacle to the **Business** of Cloud Computing is **Software Licensing** which can be overcome by the issuance of pay-for-use licences.

There is still research continuing in the area of Cloud Computing and is growing in leaps and bounds and conquering the danger of over-provisioning and under-provisioning.