The NIST Definition of Cloud Computing

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Introduction

Cloud Computing can be defined as a shared pool of computing resources that can be accessed on demand. These shared resources include things such as networks,servers,services, apps, etc. These resources can be requested and used with ease and are convenient. This model of shared and on-demand access to resources can be described in terms of characteristics, service models, and deployment models.

Essential Characteristics

The essential characteristics for cloud computing are the backbone for its functionality and ease of use. Cloud computing is on-demand, and does not need human-led effort for use of resources and can be accessed over the network through standard mediums. Multiple consumers will share and pool their resources together, and these resources will be allocated based on the demand. Resources are scalable and accessible when needed, and the cloud computing service is able to monitor, control, and allocate resources as needed.

Service Models

Cloud computing has different service models for consumers.

SaaS

The consumer may utilize applications running on the cloud, the cloud is the sole manager of the infrastructure, network, OS, storage, and application abilities,with exceptions to application configurations.

PaaS

The consumer does not manage cloud infrastructure, network, storage, OS, etc… but may have control over applications.

IaaS

The consumer is given the capabilities to manage storage, networks, OS and other resources, to deploy and run software. However the consumer is not able to control the cloud infrastructure.

Deployment Models

Cloud computing can come in different levels of infrastructure depending on consumer demand and characteristics. The cloud may be *private* where it is used by one entity with many consumers; this can be the case with a business. Next we can observe the case in which there is a *community cloud* model, where consumers with a similar goal may use the service under the premise of shared concerns or utility. A *public* cloud infrastructure is open to the public while a *hybrid* cloud is a combination of two or more of these infrastructures.