1. **Cloud Services, Servers**

**What Does it do**: -

A cloud server is a virtual or physical server, hosted by a cloud service provider, that customers create or access via an internet connection. A cloud server is physical or virtual software that provides data storage. Some servers are created using virtualization software called hypervisor into multiple virtual servers. A hypervisor abstracts the server’s processing power and pools them together, creating virtual servers. Cloud service providers use an infrastructure-as-a-service (IaaS) model to make virtual or bare metal server available to customers. Cloud servers work just like physical servers, and they perform similar functions like storing data and running applications. Because cloud services are hosted by third party providers, they deliver computing resources over a network, most often through internet. Cloud servers can be located anywhere in the world and deliver services remotely through a cloud computing environment. In contrast traditional dedicated server hardware is typically set up on premises for exclusive use by one organization.

Their key features are: -

* Computing infrastructure that can be physical (bare metal), virtual or a mix of the two depending on use case.
* Has all the capabilities of an on-premises server.
* Enable users to process intensive workloads and storage large volumes of information.
* Automated services are accessed on demand through an API.
* Gives users the choice of monthly or as you go payment.
* Users can opt for a shared hosting plan those scales depending on needs.

Cloud servers’ function similar to traditional servers since they both deliver processing power, applications and storage. However, since cloud servers are remotely accessed, they are generally more stable and secure than the traditional servers. The primary difference between a cloud server and traditional server is that a cloud server can be shared among many users over an accessible platform, often through a network such as the internet. A traditional (dedicated) server is only accessed by a given company or entity. While cloud servers perform the same functions as physical servers, cloud servers are hosted and delivered over a network rather than set up and managed over a network rather than set up and managed on site. Another difference between the cloud server versus physical server is that cloud server offers unlimited compute capacity, but physical servers are limited to their existing infrastructure or computing capacity. When comparing a cloud server verses physical server, we have to consider that physical servers are typically more customizable than cloud servers and offer more computing power, extra random-access memory and access to back up power. There are three types of cloud servers, public, private and hybrid. In public cloud, third party cloud service providers deliver computing resources, like severs, over the internet. All hardware, software and supporting infrastructure is owned and managed by the cloud provider. In contrast to public cloud servers, private cloud servers are used exclusively by a single business or organization and are often most secure. Servers can be physically located at an onsite datacentre or a third-party service provider can host a private cloud that’s made accessible through a private network. Hybrid cloud servers combine both public and private clouds. This allows data to move between public and private clouds, giving business greater flexibility more deployment options and opportunities to optimize existing infrastructure, security and compliance.

The following steps to be considered while choosing a cloud server: -

* Determine if we have variable workload or data sensitive workload. Cloud servers are best suited for variable workloads.
* Should categorize our need based on budget, provider and technology requirements.
* We should be able to define our security needs and decide if we can sustain outages.

**Impacts of Cloud Computing**: -

The environmental footprint of the online world is constantly expanding as its energy consumption rises, but there are benefits too, which must be set against the cost, Greenpeace estimates that by 2025 the technology sector could consume 20% of world’s total electricity, this increase from 7% currently is attributed to cloud computing and the further development of new technologies. Despite these claims many recent reports by companies such as Microsoft have stated that the growth of cloud storage has had a minimal impact on energy consumption and further improvements in efficiency will negate the impact of ever-expanding storage and processing.

Cloud computing is more efficient and resilient than local computing capacity for individuals and firms and also offer geographic redundancy, making data loss unlikely even in the event of a natural disaster. A 2013 research paper funded by google, revealed that while moving commonly used software applications to the cloud energy usage would decrease by 87%. Further cloud computing is a major enabler of both home and remote working, reducing the need for commuting and therefore decreasing emissions.

Computer equipment generates a lot of heat and so data centres must be kept cool. Cooling typically accounts for 40% of total energy consumption and up to 80% if the natural climate of the data centre is warmer. Furthermore, an additional environmental impact of cloud computing is the electronic waste produced by industry. In 2018, 50 million metric tons of e waste was generated globally, as for commercial reasons, equipment is often replaced as soon as more efficient technology becomes available. Other environmental impacts of data storage include coolant chemicals used in the server rooms, which are often hazardous and battery back ups of data centres. The components of these batteries are often mined unsustainably, and disposal of both toxic batteries and the chemical coolant could have a devastating impact on the local environment if not properly managed.

**How will this affect Us**: -

Today It has become an enabler of business. Business organizations are moving towards automation business intelligence and lot more. Cloud computing is one of the tools being used by many of business organizations. Cloud computing provides a way for business to manage their resources online. It allows the business entities to access their information virtually whereby data can be accessed anytime anywhere. The following are the main out of them: -

Cost Reduction: - Cloud computing works on the concept of pay per use, cloud computing helps in reducing the expenses of the company as resources are acquired only when they are needed, and payment is made as per usage. Cloud computing can cause a dramatic decrease in labour and maintenance costs.

Scalability: - This is the key benefits of cloud computing as the client has flexibility to scale up and scale down the resources as per the requirements of the organization. Business need not worry about future demands as they can easily scale up the resources and acquire additional services anytime.

Flexibility: - Cloud computing provides a lot of flexibility. Customers and users are free to decide about the services which they want to use and pay also users have the option to switch from one cloud to another. Users can choose public, private or hybrid storage based on their security needs and other factors.

Almost Unlimited Storage: - Users can store a lot more data on the cloud than their local physical storage devices. Moreover, companies can scale their storage capacity as per their requirements.

Disaster Recovery: - A business using cloud computing need not prepare complex disaster recovery plans because the service provider takes care of such issues.

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