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**Department of Computing Sciences and Mathematics**

**College of Art, Science, and Technology**

**ITEC 205: Cloud Fundamentals**

**Homework Assignment 1: Understanding Cloud Computing Concepts**

**Questions:**

1. What is the difference between Type 1 and Type 2 Hypervisors. Give an example where each type can be used.

The type 1 hypervisor is positioned directly on top of the hardware. It acts as an OS for the physical machine and has low hardware requirements. It is mostly used for server-side virtualization like Microsoft Hyper V. The type 2 hypervisor is on top of a host OS and can manage multiple OS on the client machine, but it has the downsize of the host OS consuming resources. This type is used for client-side virtualization like Microsoft’s Window Virtual PC.

1. What is the cloud service models? Explain the differences between these models and give an example where we can use each model.

The cloud service models are a group of models that provided, each with their own specialty such as infrastructure as a service being used for a hardware focus like AWS. Another kind is platform as a service which has a focus more on software development and coding like Oracle Cloud Platform. The third type is software as a service which focuses on software licensing and delivery models like Google docs.

1. What is the difference between public cloud and community cloud? Give an example where they can be used.

Public clouds are a type of cloud that is operated by third parties, giving a greater offer of scalability, and can easily be made to fit a client’s desires like if they want to have a greater number of resources or a smaller or bigger reach. Community clouds are models that are created when the idea of multiple organizations having a common interest such as how some schools will come together to create a public cloud, they all can use, or a company will make one when they are merging with another.

1. Within the context of cloud computing, what is the shared responsibility model and why we need it?

The shared responsibility model is a means of providing better security and holding the right parties responsible for any breaches of security, it is a split of duties between the client and the CSP where the CSP will take responsibility for the security of the cloud while the client takes responsibility for the security in the cloud. This is needed as it improves the security of the system as a whole and should a threat happen in a particular area, the right person is taking responsibility. For example, if a person on the client’s side uploaded a virus to the cloud system, then this model will protect the CSP of being wrongly accused.

1. Why should we use redundancy in cloud computing? Give example of three areas we need to consider for implementing the redundancy plan?

Redundancy is important in cloud computing as there is a greater risk of loosing important data should anything happen to the cloud. The first area we need to consider redundancy plans is hardware as we need the physical components to be able to run and connect to the cloud, it covers things like storage, memory, and processors. The second area is network as it covers the network structure with the switches and routers. The third area is geographic as we need to consider possible natural disasters and have two or more physical locations that have the same data should one of them be lost.

1. What are RPO and RTO and why we need them in cloud computing?

RPO is the max age of files that must be recovered from the backup for the organization to continue normal operations. This is the necessary file timeline that is needed and can be seen as the files that are the priority of recovering first. The RTO is the max time that the system can be offline before it causes more trouble than good. The RTO and RPO are necessary for cloud computing as the cloud needs the specific files to be able to run and has a limited time that it can be down before it causes the organization problems.