Azure fundamental assignment 2

1. **What is serverless computing?**

   Serverless computing is a method of providing backend services on an as-used basis. A serverless provider allows users to write and deploy code without the hassle of worrying about the underlying infrastructure. A company that gets backend services from a serverless vendor is charged based on their computation and do not have to reserve and pay for a fixed amount of bandwidth or number of servers, as the service is auto-scaling. Note that despite the name serverless, physical servers are still used but developers do not need to be aware of them.

2. **Explain Azure subscriptions, management groups and resources.**

   - An Azure Subscription can be defined in many ways, but at its simplest a subscription refers to the logical entity that provides entitlement to deploy and consume Azure resources.
   - An Azure Management group is logical containers that allow Azure Administrators to manage access, policy, and compliance across multiple Azure Subscriptions en masse. Management groups allow you to build an Azure Subscription tree that can be used with several other Azure service, including Azure Policy and Azure Role Based Access Control. Azure Management Groups provide flexibility for organizing policy, access control, and compliance across multiple subscriptions. We can nest Azure Management Groups up to six levels deep for efficient management of resources.
   - Resource groups are the lowest level of organizational scope, and are the level that contains almost all Azure Resources. Azure Resources Groups are logical collections of virtual machines, app services, storage accounts, virtual networks, web apps, Azure SQL databases, etc. Resource groups can be utilized to subdivide resources by application or environment, among the many options.

3. **Explain Azure regions, availability zones, and region pairs.**

- An Azure region is a set of datacenters deployed within an interval-defined perimeter and connected through a dedicated regional low-latency network. Azure gives customers the flexibility to deploy applications where they need with discrete pricing and service availability.

- Azure availability zones are physically separate locations within each Azure region that are tolerant to local failures. Failures can range from software and hardware failures to events such as earthquakes, floods, and fires. Tolerance to failures is achieved because of redundancy and logical isolation of Azure services. To ensure resiliency, a minimum of three separate availability zones are present in all availability zone-enabled regions.

- An Azure Region Pair is a relationship between 2 Azure Regions within the same geographic region for disaster recovery purposes. If one of the regions were to experience a disaster or failure, then the services in that region will automatically failover to that regions secondary region in the pair.

4. **Explain Azure Resource Manager, Azure subscription and management group.**

    - Azure Resource Manager is the deployment and management service for Azure. It provides a management layer that enables you to create, update, and delete resources in your Azure account. You use management features, like access control, locks, and tags, to secure and organize your resources after deployment.

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5. Provide overview of Azure Compute Services.

The word compute here refers to the hosting model for the computing resources on which our application runs. Azure compute service can be divided broadly into three categories.

- Infrastructure as a service
- Platform as a service
- Serveless services

The most fundamental building block is the Azure virtual machine. Using Azure virtual machine, we can able to deploy different services such as Windows, Linux within the Azure cloud. When we implement a virtual machine, every virtual machine will have an associated OS and data disk.

Azure compute options

Following are the main compute options available in Azure:

- Virtual Machine: It is an IaaS service, allowing us to deploy and manage VMs inside a virtual network (VNet).
- App Service: It is a managed PaaS offering for hosting web apps, mobile app back ends, RESTful APIs, or automated business processes.
- Service Fabric: It is a platform that can run on any environment, including Azure or on-premises. It is an orchestrator of micro-services across a cluster of machine
- Azure Kubernetes Services: It manages a hosted Kubernetes service for running containerized applications.
- Azure Container Instances: It offers the fastest and most straightforward way to run a container in Azure without having to provision any virtual machines and without having to adopt a high-level service.
- Azure Functions: It is a managed FaaS service.
- Azure Batch: It is a managed service for running large-scale parallel and high-performance computing (HPC) applications.
- Cloud Services: It is a managed service for running cloud applications. It uses a PaaS hosting model.

6. **What is an Azure virtual machine and when to opt for an Azure virtual machine?**

Azure Virtual Machines (VM) is one of several types of on-demand, scalable computing resources that Azure offers. Typically, you choose a VM when you need more control over the computing environment than the other choices offer. This article gives you information about what you should consider before you create a VM, how you create it, and how you manage it.

An Azure VM gives you the flexibility of virtualization without having to buy and maintain the physical hardware that runs it. However, you still need to maintain the VM by performing tasks, such as configuring, patching, and installing the software that runs on it.

Azure virtual machines can be used in various ways. Some examples are:

- Development and test – Azure VMs offer a quick and easy way to create a computer with specific configurations required to code and test an application.
- Applications in the cloud – Because demand for your application can fluctuate, it might make economic sense to run it on a VM in Azure. You pay for extra VMs when you need them and shut them down when you don't.
- Extended datacenter – Virtual machines in an Azure virtual network can easily be connected to your organization's network.

The number of VMs that your application uses can scale up and out to whatever is required to meet your needs.