**Part 1: Azure Infrastructure Configuration**

**Task 1.1: Create Resource groups based on different environments (e.g., Development, Testing, Production). Explain the organizational benefits of using Resource Groups.**

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**Resource group** is a container that holds related resources for an Azure solution. The resource group includes those resources that we would want to manage as a group. Based on what makes the most sense for our organization, we can decide which resources belong in a resource group.

A **resource** is a manageable item that is available through Azure. Virtual machines, storage accounts, web apps, databases, and virtual networks are examples of resources.

**Organizational benefits of using Resource Groups:**

By using resource groups, we can coordinate changes to the related resources.

For example, we can deploy an update to the resource group and have confidence that the resources are updated in a coordinated operation.

Or, when we’re finished with the solution, we can delete the resource group and know that all of the resources are deleted.

**Task 1.2:**

**Explore and document the purpose and usage of Availability Zones and Availability Sets in ensuring application reliability, without creating VMs.**

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| **Virtual Machine in Availability Zone**  A screenshot of a computer  Description automatically generated  A screenshot of a computer  Description automatically generated |

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| **Virtual Machine in Availability Set** |

**Availability sets** are logical groupings of VMs that reduce the chance of correlated failures bringing down related VMs at the same time. Availability sets place VMs in different fault domains for better reliability.

Availability sets have fault isolation for many possible failures, minimizing single points of failure, and offering high availability. Availability sets are still susceptible to certain shared infrastructure failures, like datacenter network failures, which can affect multiple fault domains.

**Availability zones** expands the level of control we have to maintain the availability of the applications and data on our VMs. An Availability Zone is a physically separate zone, within an Azure region. There are three Availability Zones per supported Azure region.

Each Availability Zone has a distinct power source, network, and cooling. By designing our solutions to use replicated VMs in zones, we can protect our apps and data from the loss of a data center. If one zone is compromised, then replicated apps and data are instantly available in another zone.