Azure Geographies

An Azure geography is an area of the world that contains at least one Azure region. For example, India is a geography. Similarly the United States and the United Kingdom are geographies. Across the globe, there are multiple geographies such as :

1. India
2. United States
3. United Kingdom
4. Canada
5. Africa

6. Australia
7. Europe
8. Brazil
9. Spain
10. Austria

Azure Geographies

Azure Region is a set of data centers that are connected through a dedicated low-latency network. How many data centers does a region contain? Well, we do not have a fixed number. It varies. There are regions of different sizes. A Region could be made up of just 1 datacenter or multiple datacenters. The point is, an Azure Region is a group of one or more Azure Datacenters. As of this course recording, Azure has 58 regions worldwide.

Azure Availability Zone

An Azure Availability Zone is a unique physical location within an Azure region. Each Availability Zone is made up of one or more data centers with independent power, cooling, and networking. Not all Regions have Availability Zones. Regions that support Availability Zones have a minimum of three separate zones to ensure resiliency.

If one of the Availability Zones has gone down for some reason, we still have our applications and data available from the rest of the two Availability Zones. There is a physical separation between each Availability Zone and it is this separation that protects our applications and data from Datacenter failures. With Availability Zones, Azure offers industry best 99.99% VM uptime SLA.

For some reason, if there is a power failure or power surge, equipment failure or some other fault in Availability Zone 1, only Availability Zone 1 is affected. As the availability zones are physically separted from each other, faults from one availability zone are not spread to the other availability zones. Since, in this example, we have 3 availability zones, it's like we have 3 separate fault domains. If there is a fault and Availability Zone 1 is down, we still have our VM available from the rest of the two fault domians i.e Availability Zones 2 and 3.
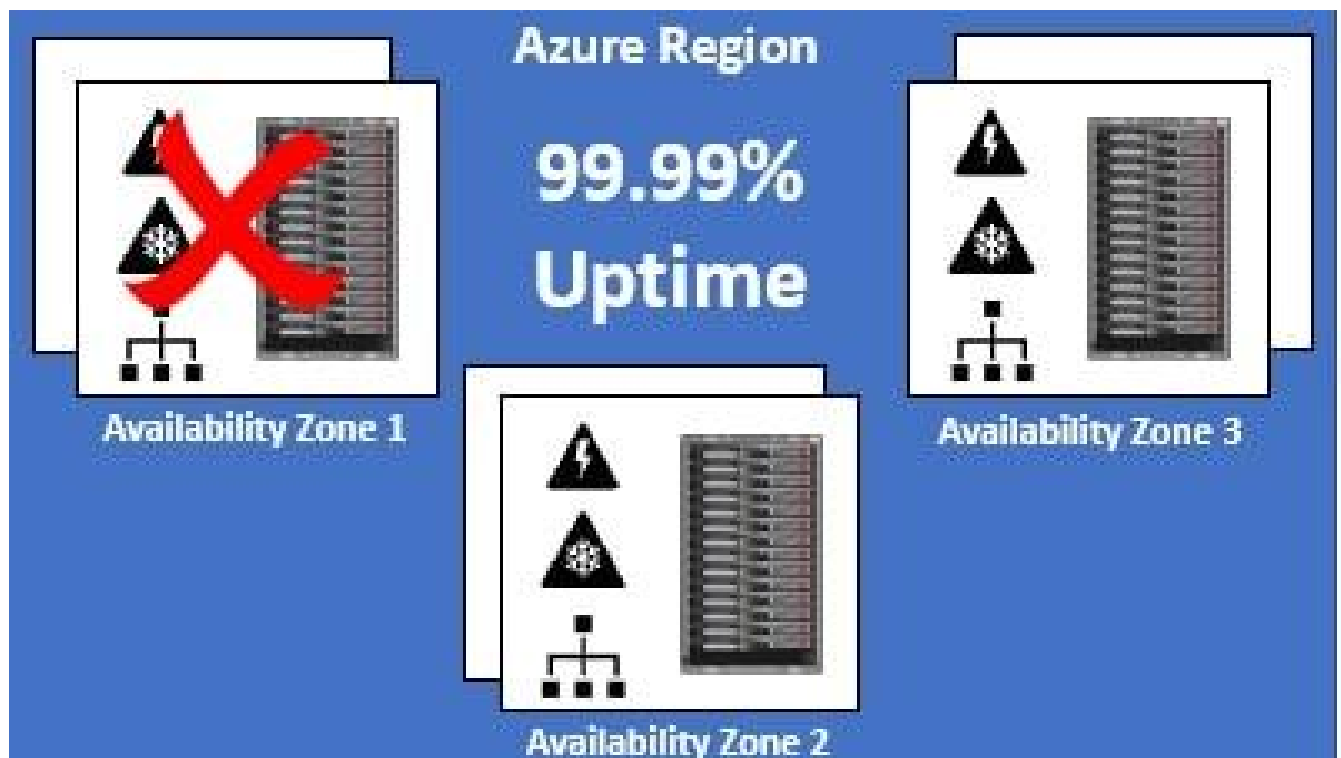
Datacentre

A datacenter is simply a building that contains the physical server. Not just one server, many many physical servers which are connected over a network. It also has it's own power, and cooling. Azure data center is a unique physical building that contains many many physical servers with it's own

power, cooling and networking infrastructure. These data ceneters are located all over the globe. As of this course recording, there are over 160+ Azure datacenters worldwide.