Attari Classes

AVAILABILITY SET

- An availability set is a logical grouping of VM
- Azure ensure that the VM are created across Different physical rack known as fault domain and different host known as update domain
- Azure recommended that you put two or more VMs in a availability set so that your application is highly available
- You get an SLA of **99.95%**(DT:- 22 min per month)
- There is no cost for the Availability Set itself, you only pay for each VM instance that you create.

Attari Classes

FAULT DOMAIN

- Fault domain means Rack

- Fault domain is Single Point of failure as all VM in same Rack might fail at the same time if the Rack fails

- Default fault domain is 2 and maximum for some region is 3

UPDATE DOMAIN

- Update Domain means Host

- If there is issue with Host then all VM might fail at the same time

- Default is 5 and maximum is 20

PROXIMITY PLACEMENT

- It is a Logical grouping to physically place VM as close as possible to each other which decrease inter-VM latency

If you have webservers and database server, then create one availability set for webserver and put all web servers in that availability set and create one availability for database server and put all database server in that availability set

Attari Classes
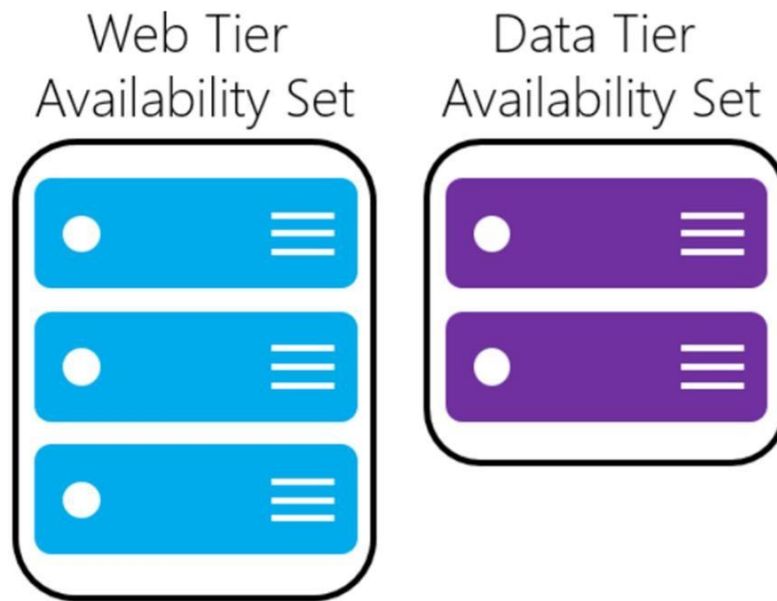
DIFFERENCE BETWEEN AVAILABILITY ZONE AND AVAILABILITY SET

- An Availability Zone protects from entire datacenter failures, In region where you have Availability Zone if one Availability Zone goes down it does not impact other Availability Zone, So servers kept on another Availability Zone will be up and available

- An Availability Set protects from failures within data center like rack or host failure, with the help of Availability Set your servers are kept on different rack and different host, so if one rack or host goes down you servers on another rack or host are not impacted and they will be up and available

Attari Classes

SLA

- There is no cost for the Availability Set / Availability Zone

- You only pay for resource like VM

- Availability Zone VM, SLA is 99.99% (DT:- 4.38 min per month)

- Availability Set VM, SLA is 99.95% (DT:- 22 min per month)

- Single VM, SLA with Premium SSD is 99.9% (DT:- 43 min per month)

- Single VM, SLA with Standard SSD is 99.5% (DT:- 3.65 hrs. per month)

- Single VM, SLA with Standard HDD is 95% (DT:- 36.53 hrs. per month)

EXAMPLE PRIVATE IP RANGE WHICH CAN BE USED
IN AZURE FOR VNET

10.0.0.0/16

172.16.0.0/16

192.168.0.0/16

VNET AND SUBNET

	WEB-SUBNET 192.168.0.0/24	DATABASE SUBNET 192.168.1.0/24	VNET 192.168.0.0/16
NETWORK IP →	192.168.0.0	192.168.1.0	
DEFAULT GATEWAY →	192.168.0.1	192.168.1.1	
	192.168.0.2	192.168.1.2	
AZURE DNS →	192.168.0.3	192.168.1.3	
	192.168.0.4	192.168.1.4	
BROADCAST IP →	192.168.0.255	192.168.1.255	

![Attari Classes]

VIRTUAL NETWORK(VNET)

- A VNet is our own Private Network in Azure Cloud

- All VM in same VNet can communicate with each other, can access internet and can connect to on premises network

- A VNet is limited to a single region

- One VNet is isolated from another VNet

- By default One VNet cannot communicate with other VNet

- Within VNet all your resource like VM are secure

- To create Vnet we need to provide Address Space(Network Block/CIDR)

- You can also add additional address space

- Azure VNet is free of charge.

Attari Classes

SUBNET

- Subnet is a partition from the Vnet Address Space

- In a VNet we can create multiple subnet

- All VM in same subnet or diff subnet can communicate(ping) each other

Azure reserves 5 IP addresses in each subnet.

- x.x.x.0→ Network address
- x.x.x.1 → Default Gateway
- x.x.x.2 and x.x.x.3→ Reserved by Azure for DNS
- x.x.x.255→ Broadcast address

VM

- Azure VM is a virtual machine in Cloud

- VM is created using preconfigured Image

- Image include OS and other software if required

- Various combination of CPU, Memory, Disk is known as VM size

- VM Size are broadly categorized into Family

- You can take RDP/SSH of VM

VM FAMILY

General purpose	B, Dsv3, Dv3, Dasv4, Dav4, DSv2, Dv2, Av2, DC, DCv2, Dv4, Dsv4, Ddv4, Ddsv4	Balanced CPU-to-memory ratio. Ideal for testing and development, small to medium databases, and low to medium traffic web servers.
Compute optimized	F, Fs, Fsv2	High CPU-to-memory ratio. Good for medium traffic web servers, network appliances, batch processes, and application servers.
Memory optimized	Esv3, Ev3, Easv4, Eav4, Ev4, Esv4, Edv4, Edsv4, Mv2, M, DSv2, Dv2	High memory-to-CPU ratio. Great for relational database servers, medium to large caches, and in-memory analytics.
Storage optimized	Lsv2	High disk throughput and IO ideal for Big Data, SQL, NoSQL databases, data warehousing and large transactional databases.
GPU	NC, NCv2, NCv3, NCasT4_v3 (Preview), ND, NDv2 (Preview), NV, NVv3, NVv4	Specialized virtual machines targeted for heavy graphic rendering and video editing, as well as model training and inferencing (ND) with deep learning. Available with single or multiple GPUs.
High performance compute	HB, HBv2, HC, H	Our fastest and most powerful CPU virtual machines with optional high-throughput network interfaces (RDMA).

- **IAAS -->** Azure manages the underlying infrastructure (i.e Servers, Networking, Storage and even Virtualization), but the customer is responsible for installing the operating system updates, critical patches and installation of application eg virtual machine

- **PAAS -->** Azure manages the underlying infrastructure (i.e Servers, Networking, Storage and even Virtualization). They are also responsible for installing the operating system updates, critical patches, application. Customer manages the application and it's data. eg Azure AD, Azure Storage, Azure CDN, Azure Bastion

- **SaaS -->** Azure manages everything such as virtual machines, networking resources, data storage, and applications. Customer provide the data. eg office 365

END