All in one

Azure Networking Services

Azure Networking Services

Network Services help in	Connecting to cloud and cloud resources, protecting and monitoring services and also with the delivery of the application
Azure Virtual Network	A network on the cloud which allows to interconnect all the cloud resources
	A Virtual Network is only limited to a single location. In some cases, we may need to deploy the network to more than one places like when deploying the sources over multiple regions. This is achieved using VnetPeering or VPN Gateway
	VPN Gateway, in rare cases, is used to connect Virtual Networks too
	Virtual Network Diagram is an interesting thing
NSG(Network Security Group)	For managing virtual network security
Azure Load Balancer	Simply means, distributed traffic across multiple resources
Azure Application Gateway	Similar to load balancer but designed to support web-traffic
	SSL Termination meaning communicating

	encrypted with the users associated with the traffic outside but unencrypted to backend devices(VMs) for faster processing
Content Delivery Network	Availability of web content across multiple regions(also called Points of Presence) to minimize latency

Compute Services

Compute Services

Computing Services	Category of services used in running cloud-based applications
General Application scenario	When we are running applications on an operating system, which is tied to a physical machine, all the applications are sharing the same filesystem, services, ports etc from the same OS. In this case, there might come a point where these applications might collide in terms of using resources. To avoid this, **Virtualization** comes into play
	Virtualization: The virtualization software installs multiple **Emulated Virtual Machines** which allows us to install OS and create separate

	Sandboxes(Environments)
Virtualization in Azure	We can either choose Microsoft's Images or we can ask developers to create a custom image for us
	Virtualization falls under IaaS offering or say, "The service of 'creating a virtual machine' in Azure falls under IaaS"
	No Autoscaling, so we always work one node, one virtual machine at a time
	Only Vertical Scaling is possible
Virtual Machine Scale Set	A type of service in Azure
	An Image is automatically scaled(set of identical images) among multiple virtual machines and those VMs are grouped inside a load balancer
	The number of VMs can be set statically or automatically
	Virtual Machines Scale Set falls under IaaS
	A maximum of 1000 nodes and minimum is 1
Container	Creating a Container Runtime which is used to create further Containers(which runs applications or say sandbox for application)
	In Virtualization, the virtualization software would allow us to create multiple OS. In the same manner, the Container

	Software would allow us to create Container Runtime which can be used to create separate runtime environments for applications
	Every application needs an OS to run. Since all the sandboxes in container runtime, which are used for running application, rely on single OS, which is the host OS. Every-time the sandbox needs an environment, it basically emulates from the host OS(It is similar to how virtual machines emulates the host hardware) | This is also the reason why they are lightweight and requires less maintenance
Azure Container Instances(ACI)	The user asks the developer to bundle up the application along with its configuration in a **Container Image**, which is hosted further into a **Container Repository**
	Container Repo: To host images
	Now, the **Azure Container Instances** service would group all the containers inside a **Container VM**, which is further accessed by users
	Falls under PaaS
	Can sometimes be a Server less container
	Maximum number of container groups is 20. Therefore, less scalable. Minimum is 0

Azure Kubernetes Service(AKS)	Similar to the above but what AKS does it that it takes all the containers and put them in separate VMs, in turn creating out a **load-balancer** set
	Here, the scaling can be both static and automated
	Available in other clouds as well
	Falls under PaaS
	There should be minimum of 3 nodes and maximum is 100
App Service	For hosting web-applications
	The user would request a complete web-app package from the developer and this package will be hosted by the Azure App Service in such a way that several nodes will be created which will be accessed by the Users outside
	Falls under PaaS
Azure Functions(Function App)	For providing the service of hosting small service instead of the entire app package
	The user would ask the developer to create a small package of services and later that package is deployed to Function App. Further creating multiple nodes similar to App Service
	Falls under PaaS
	Very low management and maximum number of nodes can be 200. Minimum is

	0

Resource, Resource Groups

Resource	An object that represents a service in the cloud
	One Resource can only be a part of one resource group
	We can not create a Resource without first creating a Resource Group
	Defined in JSON format
Resource Group	A way of grouping resources logically
	Are free, create as many as we want
	Another role is Access Control(Managing Permissions, Administration etc.)
	Resource Groups can not be nested
Azure Resource Manager	Centralized control of Resources in Azure, governing all the resources and also for creating services

Regions, Availability Zones, Region Pairs

Region	A geographical location of a server. Useful in defining the location of the service we want to run
Availability Zone	A number given to data centres of a

	region for redundancy and other features
	The use of AZ is implemented in services. For this reason, the services are defined in two types- Zonal Services and Zone-Redundant Services
Zonal Services	Zones need to be defined where they will be running
Zone-Redundant Services	Zones doesn’t need to be defined because they run in either multiple servers or all servers. The only thing that need to be defined is whether to enable Zone-Redundancy or not in a given service
Region Pairs	Grouping Regions
Geographies	Contains two or more regions