Azure fundamental assignment 3

(Durgesh Kumar Shukla)

1. What is Azure App Service and when to opt for Azure App Service?
2. Differentiate Azure Container Instances and Azure Kubernetes Service
3. What is the Azure function? Explain in brief.
4. What is Azure Virtual Desktop?
5. What is Azure virtual networking? Explain in detail.
6. Explain Azure VPN gateway.

Question 1. What is Azure App Service and when to opt for Azure App Service?
Answer:
Azure App Service
Azure App Service lets you create apps faster with a one-of-a kind cloud service to quickly and easily create enterprise-ready web and mobile apps for any platform or device and deploy them on a scalable and reliable cloud infrastructure.
When to opt Azure App Service
When you're building a web/mobile app in Azure, you might use Azure App Service. Azure App Service is a popular PaaS offering that can simplify app deployment and hosting. Azure App Service provides features like load balancing, auto-scaling, and SSL encryption — all without having to manage the underlying infrastructure.App Service enables you to build and host web apps, background jobs, mobile backends, and RESTful APIs in the programming language of your choice, without managing infrastructure.

Question 2.Differentiate Azure Container Instances and Azure Kubernetes Service.
Answer:
Azure Container Instances
It runs containers on Azure without managing servers. It is a solution for any scenario that can operate in isolated containers, without orchestration. Run event-driven applications, quickly deploy from your container development pipelines, and run data processing.
Azure Kubernetes Service
Deploy and manage containerized applications more easily with a fully managed Kubernetes service. It offers serverless Kubernetes, an integrated continuous integration and continuous delivery (CI/CD) experience, and enterprise-grade security and governance. Unite development and operations teams on a single platform to rapidly build, deliver, and scale applications.
Difference b/w Azure Container Instances and Azure Kubernetes Service

	ACI	AKS
Description	Run containers without managing servers.	Orchestrate and manage multiple container images and applications.
Deployment	For event-driven applications, quickly deploy from your container development pipelines, run data processing, and build jobs.	Uses clusters and pods to scale and deploy applications.

Web Apps (Monolithic)	Yes	Yes
N-Tier Apps (Services)	Yes	Yes
Cloud-Native (Microservices)	Yes	Yes, recommended for Linux containers
Batch/Jobs (Background tasks)	Yes	Yes
Use cases	• Dev/Test scenarios • Task automation • CI/CD agents • Small/scale batch processing • Simple web apps	• Containers and application configuration portability • Enables you to select the number of hosts, size, and orchestrator tools • Transfer container workloads to the cloud without changing your current management practices.
Major Difference	You should use AKS if you need full container orchestration, such as service discovery across multiple containers, automatic scaling, and coordinated application upgrades.	

Question 3.What is the Azure function? Explain in brief.

Answer:

Azure Function

it is a serverless computing service based on the cloud. Functions enable event-triggered codes to run without the need for infrastructure. In addition, these event-triggered codes or scripts will not run continuously, which improves the scalability of the said codes.

Azure Functions is best to employ for parts of your applications that run as separate processes. These scripts are event-triggered and need to be scalable.

Common Use Cases

Always keep in mind that Azure Functions is a serverless service. What this means is that Functions have specific uses. Moreover, you cannot replace your entire website with Functions.Below are examples of when to use the Functions:

- Generating notifications and reminders
- Processing files
- Scheduling tasks and messaging
- Processing data and data streams

- Implementing background backup tasks
- Lightweight APIs
- Proof of Concepts and MVPs
- Backend calculations

Azure Functions Advantages

Pay as you go model: Azure Functions comes in the Pay as you go model. User can pay only for what they use. For Azure functions, cost is based on the Number of Executions per month. Cost structure of Azure Functions are mentioned above in the Pricing Section.

Supports variety of Languages: Azure Function supports major languages like Java, C#, F#, Python and more. Refer above to know more about Azure Functions supported languages.

Easy Integration with Other Azure services: Azure Functions can be easily integrated with the other Azure Services like Azure Service bus, Event Hubs, Event Grids, Notification Hubs and more without any hassle.

Trigger based executions: Azure Functions get executed based on the configured triggers. It supports various triggers like HTTP Triggers, Queue Trigger, Event Hub Trigger and more. Being as a trigger-based service, it run on demand.

Continuous Integration and Continuous Deployment (CICD) It will Perform Continuous Integration,Run unit testings,Configure Azure infrastructure,Test Integrations and Lastly, deploy Azure Functions App.

Runtime Portability

Microsoft developed Functions to be portable. Thus, it allows you to build and run serverless applications anywhere, from your network to any cloud services.

Question 4.What is Azure Virtual Desktop?

Answer: A virtual desktop is a full desktop that runs on a remote server. This enables you to securely access work applications and data from wherever you are and on any device. It expands the possibilities beyond the physical desktop screen in the office.

Azure Virtual Desktop(Azure VD)

Azure Virtual Desktop is a desktop and app virtualization service that runs on the cloud. It provides all the benefits you might expect from a virtual desktop while offering the same tools and resources.Here's what you can do when you run Azure Virtual Desktop on Azure:

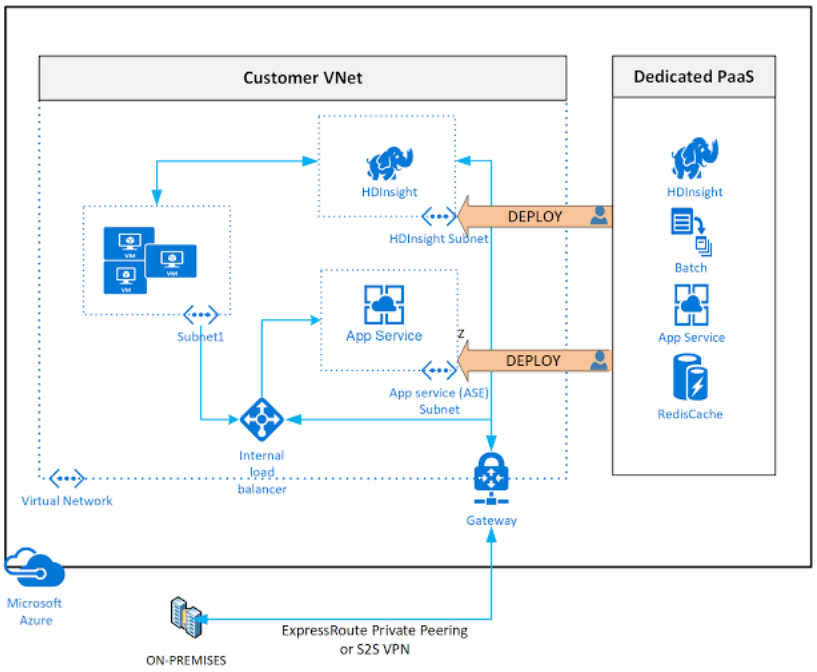
- Set up a multi-session Windows 11 or Windows 10 deployment that delivers a full Windows experience with scalability
- Present Microsoft 365 Apps for enterprise and optimize it to run in multi-user virtual scenarios
- Provide Windows virtual desktops with free Extended Security Updates
- Bring your existing Remote Desktop Services (RDS) and Windows Server desktops and apps to any computer
- Virtualize both desktops and apps
- Manage desktops and apps from different Windows and Windows Server operating systems with a unified management experience

Benefits of a virtual desktop

- work remotely
- Simple security management
- occasional need for PCs
- different types of PCs for different teams in the business

- Simple to deploy and configure
- Cost effective
- Easy to scale
- Flexible

Question 5.What is Azure virtual networking? Explain in detail.
Answer:
Azure Virtual Network
Azure Virtual Network (Azure VNet) is the fundamental building block for private network in Azure.It enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other on the internet, and on-premises networks.
It is similar to a traditional network that you'd operate in your own data center but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation.

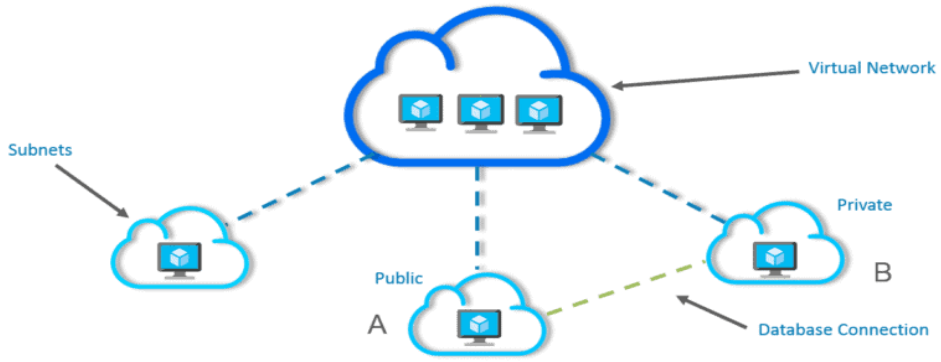


Use of Azure Virtual Networking
The main purpose of Virtual Networks is to act as a communication channel between resources launched in the cloud. It can be use to;

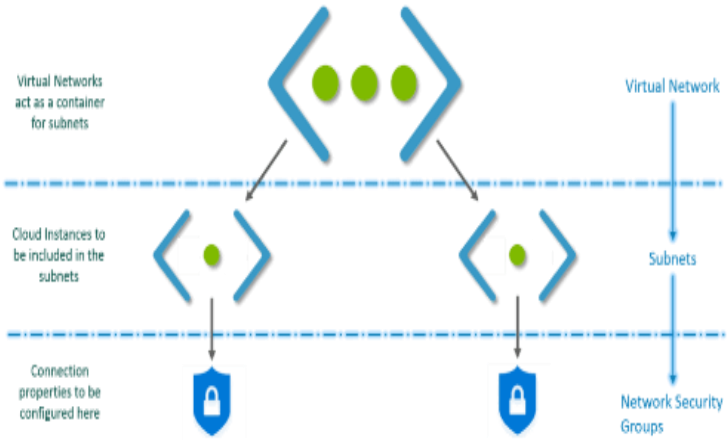
- Create a dedicated private cloud-only VNet to allow services and VMs within the VNet to communicate directly and securely in the cloud.
- Securely extend a data center, by building traditional site-to-site (S2S) VPNs, to securely scale capacity.
- Deploy hybrid clouds by securely connecting cloud-based applications to on-premises systems.

Key Components of Azure Vnet
1.Subnets: Subnets enable segmenting a virtual network into one or more subnet networks and allocating a portion of the virtual network addresses space to each subnet. Azure resources are deployed to a specific subnet that is segmented using VNet address space. A subnet can further be divided into:

Private Subnet – A network in which there is no internet access.
Public Subnet – A network in which there is internet access.



2. Network Security Groups (NSG): Use to permit or deny traffic (inbound or outbound), via rules, to a subnet or network interface.



Question 6.Explain Azure VPN gateway.
Answer:
Azure VPN Gateway
A cloud based network gateway that enables in connecting on-premises networks with Azure using site-to-site VPNs. Azure VPN Gateway provides secure connectivity by using industry standard protocols, IPsec and IKE to secure the connection. In order to build the connection, Azure requires using its preferred gateway devices vendors for establishing a site to site connection. It can also be used to establish connection between virtual networks i.e. VNet to Vnet and it provides two different types of gateways;
Static Routing – Delivers policy based VPN connectivity and routing
Dynamic Routing – Provides route based VPN connectivity and routing
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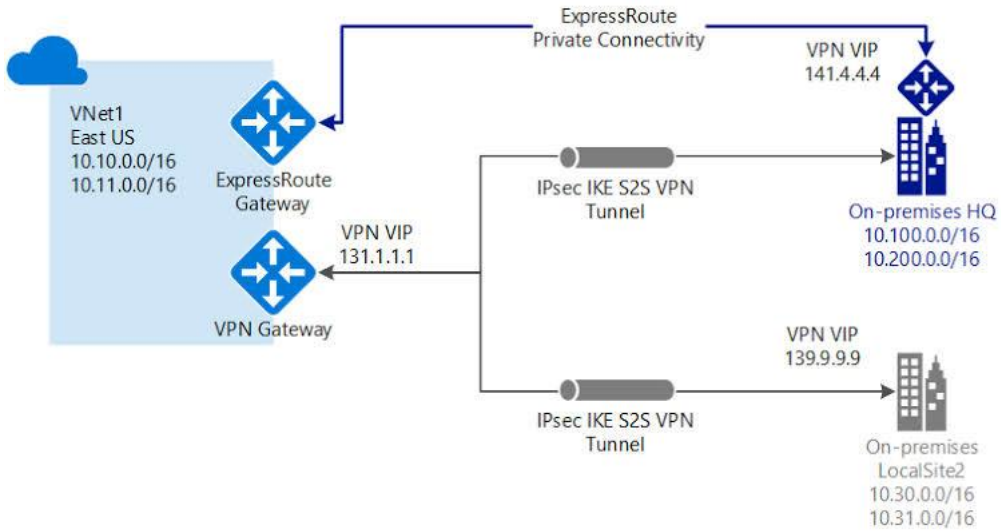

Use of Azure VPN Gateway

It enables organizations to

- Create a site to site VPN connection between on premises IT Infrastructure or from any location with Azure hosted resources
- Create secure VPN connections with on premises and Azure
- Connect on premises servers with virtual machines, SQL Azure or other Azure Cloud resources.

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