Azure Overview

09 August 2022 09:39

User Services

Applications

OS

Kernel

Physical

Bare Metal	Create an illusion for virtualization where the OS thinks it is directly connected to the physical components

Virtualization	IBM	VM Ware	Microsoft - Hyper V

Proposed virtualization

Virtualization types	Server	Network	Storage	Presentation RDS (Remote Desktop Services)	Desktop	APP-V	UE-V | User Experience Virtualization

Network Virtualization	NVGR
Storage Virtualization	Automatic storage

Desktop Virtualization	VDI (Virtual Desktop Infrastructure)	Client side virtualization

UE-V	Allows users to carry configuration device to device

Cloud	Earlier called - Web Hosting

Physical	**Virtual**
Managed by MS	Managed by customer

IaaS	Infrastructure as a service	The physical components are taken care by the vendor

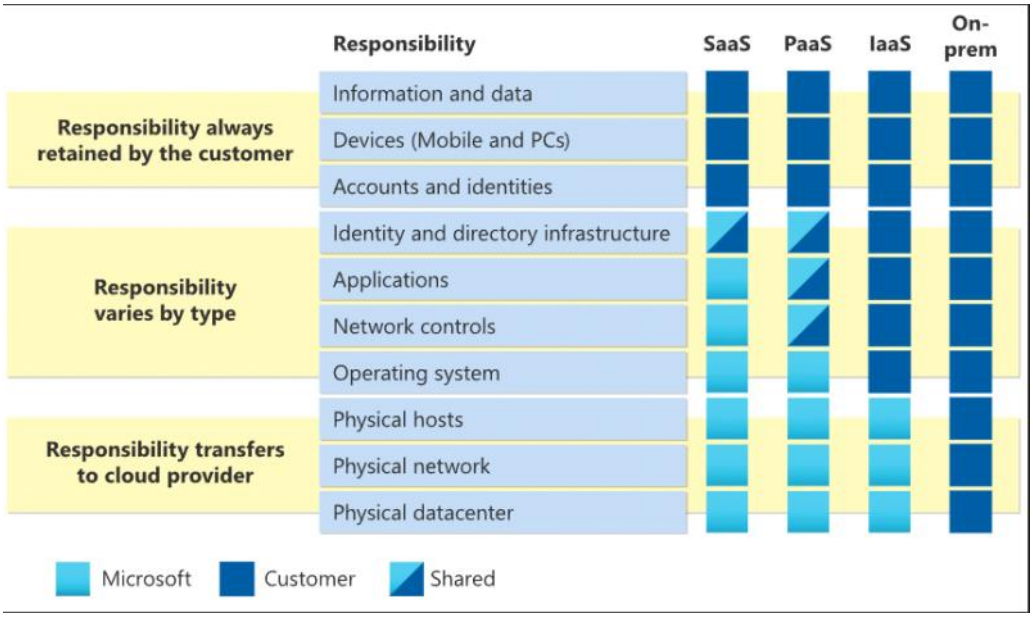
SLA	Service Level Agreement	Commitment | What will be the uptime and downtime
		No HA, No DR

PaaS	Platform as a service	Web hosting service	Infrastructure	Security	Necessary prerequisites
Example	Kubernetes	Storage Instances	Active Directory		

SaaS	Software as a service	Directly access software with license

Public cloud	**Private cloud**	**Hybrid cloud**
No capital expenditures to scale up	Organizations have complete control over resources and security	Provides the most flexibility
Applications can be quickly provisioned and deprovisioned	Data is not collocated with other organizations' data	Organizations determine where to run their applications
Organizations pay only for what they use	Hardware must be purchased for startup and maintenance	Organizations control security, compliance, or legal requirements

Azure =	**Tenant**	
	Directory	User ID / Password / Policies
	Domain	System to be bounded


Responsibility
SaaS
PaaS
IaaS
On-prem
Responsibility always retained by the customer
Information and data
Devices (Mobile and PCs)
Accounts and identities
Responsibility varies by type
Identity and directory infrastructure
Applications
Network controls
Operating system
Responsibility transfers to cloud provider
Physical hosts
Physical network
Physical datacenter
Microsoft
Customer
Shared

Azure

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Azure Region

Data centres present in physical geo locations.

Data Residency	Compliance / Policies
India	User Data should remain within India
60+	Across 140 Countries

Azure Resources

Service when deployed is a resource.	Different services offered by azure

Azure Resources Group

Resource delegation	Policies for any units to have access to specific services/resources
Example	BU1 Requires IaaS resources, so it will have access to those resources only
	It's a container which contains all the

Subscription	Service deployment
Enterprise Agreement	
Cloud Service Provider (CSP)	
Pay as you Go (PAYG)	Based on the usage, credit card based
Free	4 VMs limitation
Student	

Availability Set	Failure Cluster	Service will automatically move from one server/node to another server/node

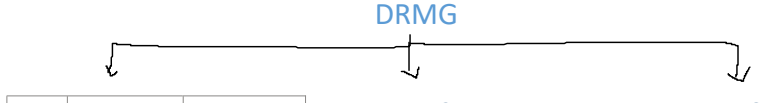
Fall Domain	
2/3 Physical racks	If one rack fails, then the service is available from another rack

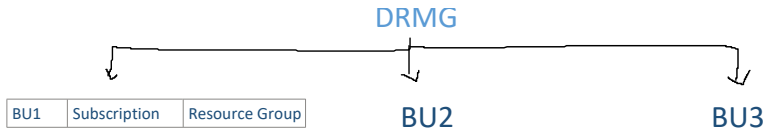
Update Domain	
5 UDs, Max. 20	When Microsoft want to update their services. The service will be up and running from another rack

Availability Zone	Each data centre is paired with another data centre
	If primary facility is down due to disaster, services will be available from another facility

Soft limit	Hard limit

Management Groups	DRMG
Multiple subscriptions	For different BU's





Container	Required Dependencies are in containers which can be deployed into different environments
Pack	Packages of software that contain all of the necessary elements to run in any environment.
	virtual machines virtualize an entire machine down to the hardware layers and containers only virtualize software layers above the operating system level.

Container	**VM**	**Functions**
PaaS	IaaS	No dedicated OS
ACI Azure Container Instance	Create Instances and manage	
	High performance computing	

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Web App. Service	**PaaS Service**
	MS will provide infrastructure for web app. Deployment. Infra will be controlled by MS
	Application interface will be provided by MS
Staging	

Azure Revisit

18 August 2022 09:05

Resource Group	All services of a specific unit

OS	Lies between application and hardware

32bit -	supports only 4
64bit processor-	supports memory up to 512gb.

Diff btwn serverOS and workstationOS(our computer)
Server--> u can configure ADDS, DNS, DHCP, IIS(can host multiple host)
Client- 1 IIS(only single that too for testing)

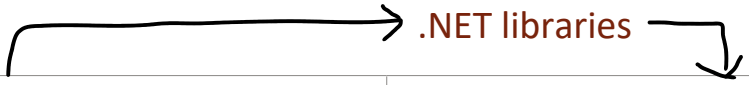
HArddisk-->	2 types-- Magnetic(head reads data from the platter)
SSD Solid State Drive	Electronic Circuitry

HUB-	used to connect computers together(switch also does the same)

The difference is hub sends data to all comp but switch wont flood on all
he will send it only to the desired destination

IAAS-	u are responsible for everything inside vm
Microsoft	is responsible for servers and datacenters

Azure Portal	Azure Power shell	Azure CLI	ARM Templates



CMD	**Power shell**
Bahot pehle se hai	Recent addition
Limitations	Syntax : VERB-NOUN

16 bit shell	GET-SERVICE
Not extensible	

Manage Azure through-->

- Portal
- Azure Powershell
- AzureCLI
- ARM templates

Difference between PowerShell and CMD is

CMD(commandline/Dos windows) was there in windows OS since beginning

Powershell(recent edition-10 years back)

CMD has lot of limitations(16bit), not extensible.

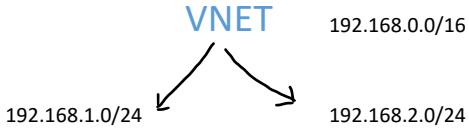
Power shell is extensible u can add different modules to it for better functionality.

Powershell syntax- Verb-Noun eg. Get-Services

Linux--> Simple Shell(Azure CLI)
Its cross platform (supported by mac windows Linux etc.)
So use cloud shell(on portal) when you aren't supposed to install CLI and PowerShell

Azure Networking	Isolated portion in the cloud

VNET	VNETS are required when working with IaaS
VM	will always be a part of subnet and subnet is a part of vnet



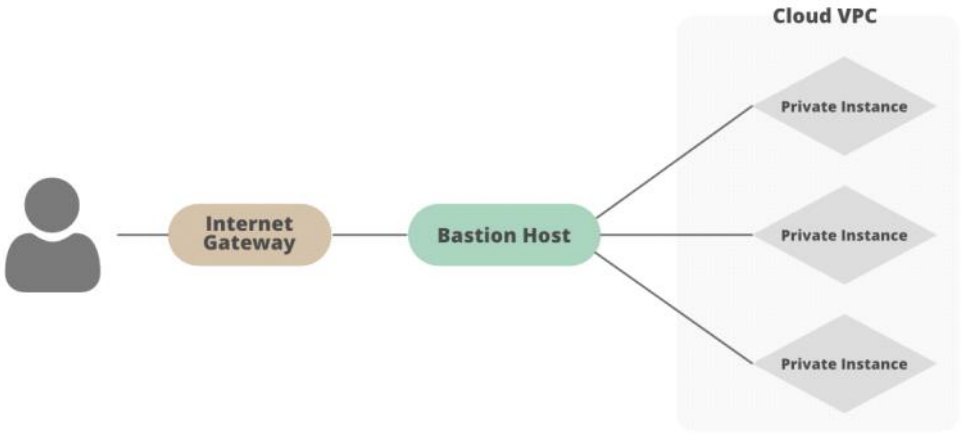
VNET	Routing is automatically done between the subnets	System Routing

Create a logically isolated section in Microsoft Azure with this networking service. You can securely connect it to your on-premises data centre or a single client machine using an IPsec connection. Virtual Networks make it easy for you to take advantage of the scalable, on-demand infrastructure of

Azure while providing connectivity to data and applications on-premises, including systems running on Windows Server, mainframes, and UNIX.

Use Virtual Network to:	Extend your datacenter
	Build distributed applications
	Remotely debug your applications

Bastion Host	server whose purpose is to provide access to a private network from an external network, such as the Internet



VPN	Virtual Private Network
	Linking 2 locations through encrypted closed channel

Leased Line	Fast /point to point	Expensive

VNET Peering

- Virtual private network- linking two secure networks over an insecure network(internet)
- Using vpn gateway we can have encrypted communication channel between both location
- Leased lines- fast point to point links (very expensive)
- Peering allows two virtual networks to connect directly to each other.(much faster and secure than vpn)

- Peering is a two way relationship:
  From vnet1 to vnet2 & From vnet2 to vnet1

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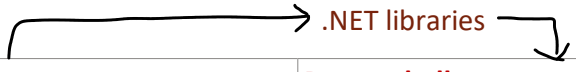

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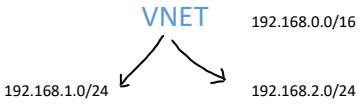

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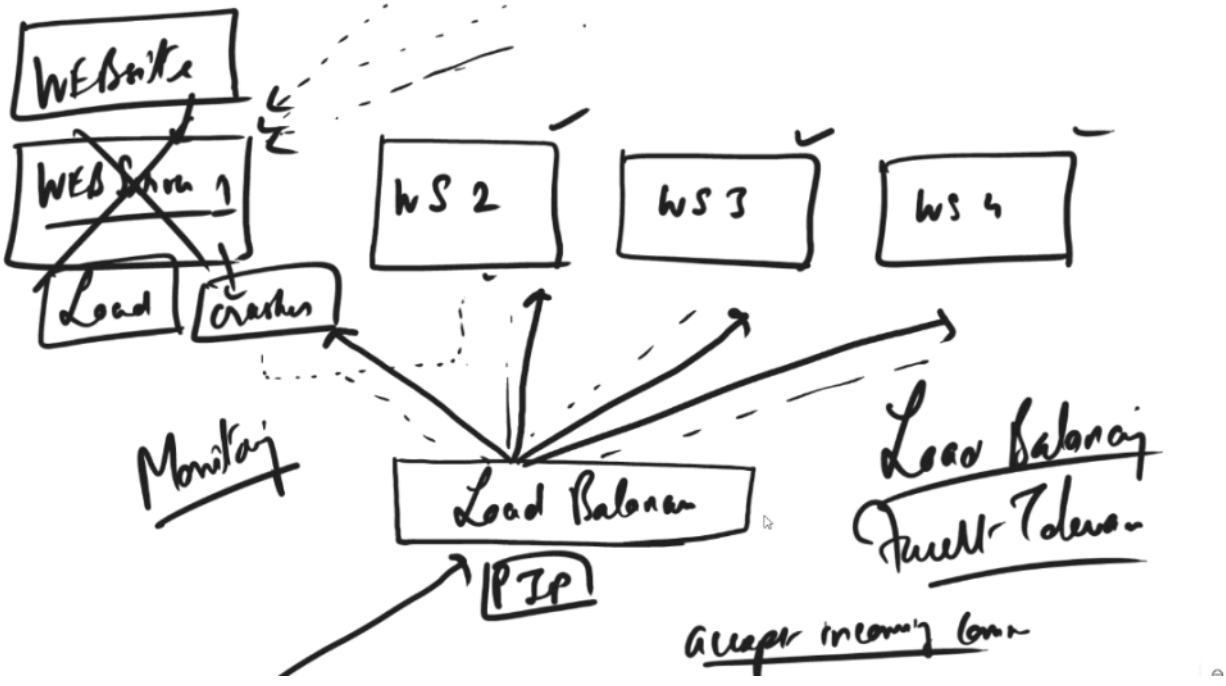
Load Balancer	Fault Tolerance	Equal distribution of load



Loadbalancer: users will not go to webserver directly, they'll hit the LB and LB will distribute the request evenly also it monitors the servers at the same time such that if one webserver fails it will route the request to other webserver.

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AzureLoadbalancer-

ApplicationGateway-

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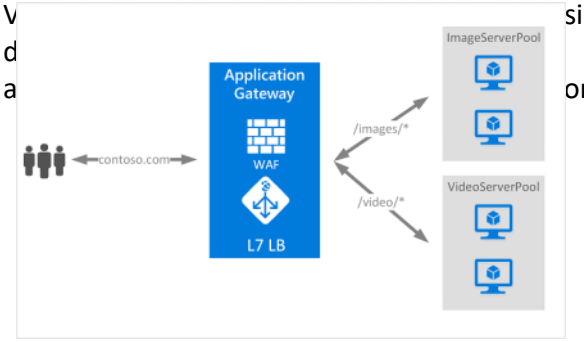

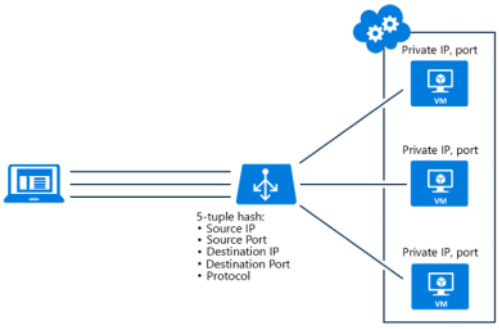

VMSS	Based on increasing and decreasing demand of resources scale set will increase and decrease accordingly

https://microsoftlearning.github.io/AZ-104-MicrosoftAzureAdministrator/	LABS

https://medium.com/awesome-azure/azure-difference-between-azure-load-balancer-and-application-gateway-9a6019c23840	Difference between ALB and AGW

BLOB	Binary Large Object	Unstructured Data
SLA	Service Level Agreement	Uptime guarantee

Block Blob	File Share	Page Blob
		Page blobs are optimized for virtual machine hard disk files

Azure Functions	on-demand services to you, and Functions handles the rest.
	provides all the continually updated infrastructure and resources needed to run your applications
	focus on the pieces of code that matter most
	Functions provides serverless compute for Azure

A workflow is a series of steps that defines a task or process.

Azure Logic Apps	create and run automated workflows that integrate apps, data, services, and systems
	develop highly scalable integration solutions
	Works when a trigger condition is met
RBAC	in azure is IAM
AppServices	you get the platform to host your webite.
Autoscale	the no of servers increases when no of users increases
Docker(mediator)	is an engine that run container, work with it and manage the containers