# Powershell Commands:

1) Deploy a virtual machine from Azure Marketplace

New-AzResourceGroupDeployment    New-AzVM

2) VM Scale set properties

Get-AzVmssVM   -ResourceGroupName  "resourcegroup L"   -VMScaleSetName "VM"

3) EventHub streaming

Set-AzDiagnosticSetting  -ResourceId  logsbapp0 L  -ServiceBus RuleId  < >

-Enabled $true

4) Move Resources:    Move-AzResource    ResourceId    Destination ResourcegrpNm

New-Az Application Gateway IP Configuration

az container logs  --resourcegroup <>  --name <>

Get-Az ExpressRoute Service Provider  Name  Cost  PeeringLocations

Bandwidths Offered  Status.

az network vnet list  --output  table

## VPN Gateway

az network public-ip create \
--resource-group <>  --name<>  --allocation-method <>

az network vnet-gateway create \
--resource-group <>  --name <>  --public-ip-address <>  --vnet <>\
--gateway-type  <>  --vpn-type <>  --sku <>  --no-wait

Monitor

Move - Az Resource
Update - Azure Rm Site Recovery Policy
Export - Az Resource Group
New - Azure ADMSInvitation
Set - Azure Rm Local Network Gateway
New - Azure Rm Role Definition  -InputFile <>

Azure CLI Commands. ⟶ returns a JSON
String

az account list -- output table

az group list -- output table

az resource list ⟍
    -- resource-list group < > ⟍
    -- resource-type    Microsoft.Web/sites

Check out page
for Az CLI command

New- Az Resource Group
    — RsourceGroupName
    — Location

New-AzVm
    =

Get- Az Public IpAddress
    — Resource GroupName

az vm list

az vm create

az vm delete

Similarly for keyvault.

az key vault list
  — " —  create
    — " —  delete

Get- Az Vm Image.Offer

Get- AzVMImage Sku

Get- AzVMSize

Get- AZVM

Update-AzVM
    — VM
    — Resource Group

az network vnet create
            ↓

az network vnet subnet list

Stop-AzVM
    — RGName
    — Name

Start-AzVM
    — ResourceGroupName
    — Name

Powershell commands:    verb is first compared to CLI commands

Get-Az VM          Get-Az VirtualNetwork
New-AzVM          New-Az VirtualNetwork
Remove-AzVM

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│  ORCHESTRATOR   │                    │ 🔲  🔲  🔲  🔲      │
└─────────────────┘                    └──────────────────────┘
        │                                    │          │
┌─────────────────┐                  ┌──────────────┐  ┌──────────────┐
│   WEB API       │                  │   FABRIC     │  │   FABRIC     │
└─────────────────┘                  │ CONTROLLER   │  │  CONTROLLER  │
        │                            └──────────────┘  └──────────────┘
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│ Web Portal      │                  ┌────────────┐    ┌────────────┐
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   AZURE PORTAL
```
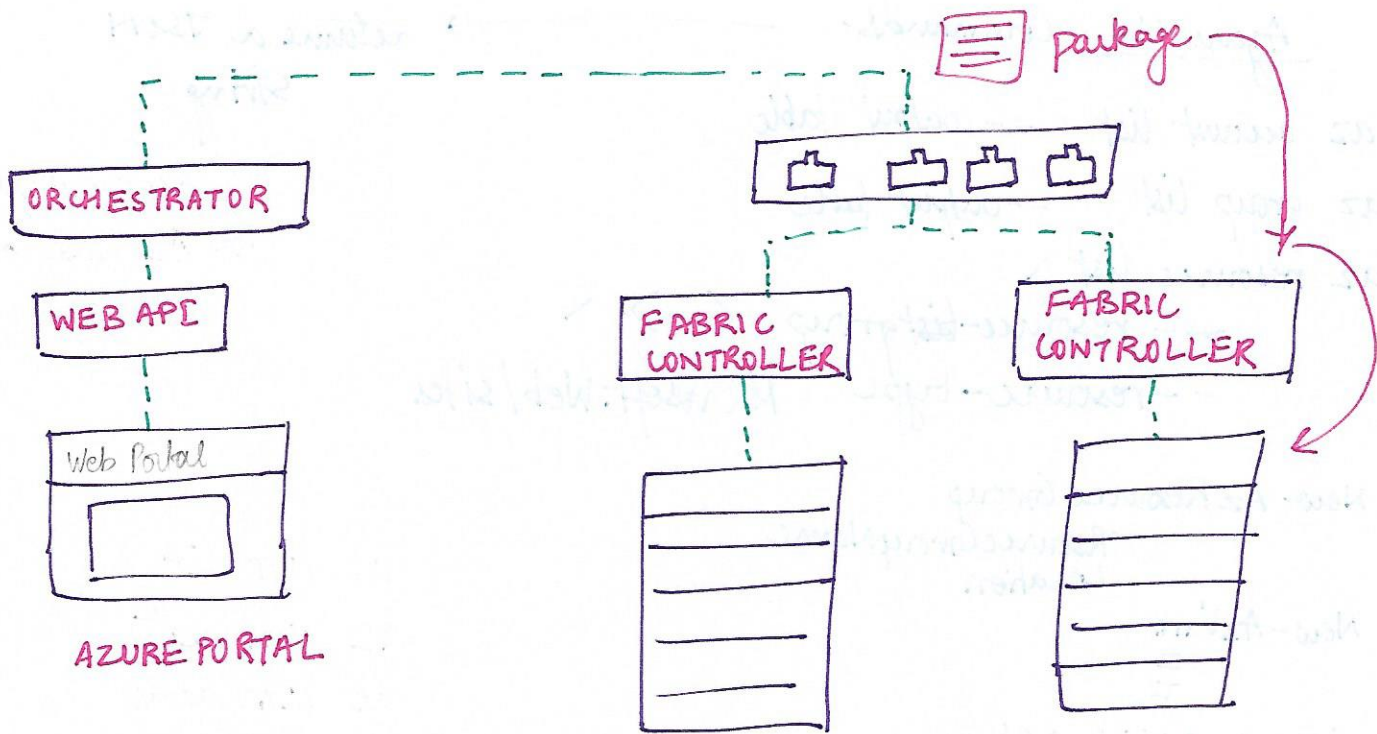
## 10 Categories

Compute
Networking
Storage
Mobile
Databases
Web
Internet of Things
Big Data
Artificial Intelligence
  Dev Ops

Azure Architecture Overlook.

Common characteristics:

1) Durable
2) Secure
3) Scalable
4) Managed
5) Accessible

⊛ Passwords need to be 6-12 characters

Group policies are not available in Azure Active Directory.

Azure Security Center can be used to monitor on-premise resources.
  Install an agent to send data to Azure security center.

Azure Monitor can be set to send monitoring data.

User with Owner role can transfer ownership of Azure Subscription.

Azure Resource Manager : Roles and duties
  Consistency in the implementation across Azure environment.
  Common platform for deploying objects to cloud infrastructure.

V2 storage account : Charged for amount of read and write operations.
                     any data transfer activities.

VM's in same Resource Group : have same permissions simultaneously.

Power Apps portal cannot be used to create Azure resources.

Support plans:    Basic — no tech support
                  Developer— Business hours support.
                  Standard— 24×7 support

Management Groups: Manage compliance of Resources across Subscription.

PowerShell command script can't be run on Azure CLI It has its
                                              own commands.

VM's storage is charged seperately. It has its own billing.

**Azure Virtual Network** : Isolated network in Azure, can be used to host your resources.

✱ Virtual machine created in a virtual network, the VM gets a Private IP address from the address space of subnet it is launched

**Network Security Group:** Important for permissions

Subnet is part of network security.

ARM templates are in JSON format

Previlage Identity Management — previlage users have to jump through additional verification because of their role.

Availability Zones — not all regions have it and it can't be replicated over regions.

SQL Data Warehousing — High availability available built in.

Azure Storage — 3 copies data replicated but locally not aross data centers.

**Azure SQL Synapse** — cloud based service used to run complex queries across petabytes of data in relational database. (MPP) used.

**AAD** — Managed service no need to host any domain
↳ can provide authentication to Azure and MS Office 365

# Test Prep points

SCOM Alert  2
MX records
NAS device
Azure Route Table
Durable functions
Custom Route
tables

- Smart card authentication is not supported for Azure AD connect.
  use ADFS Active Directory Federation Services

- Elastic DB transactions with horizontal partitioning.
- Azure AD connect - OU filtering and refreshing the directory schema
- Azure Storage Account - SAS (Shared Access Signature)
- AAD - Direct Report rules
- Password administrator role.
- Azure Application Gateway   WAF
    ↳ Standard tier doesn't support WAF

⊕ Azure Site Recovery can be used for only Windows VM's Generation 2 machines

- Web jobs should be used to manage all the code segments from the
                 same DevOps environment.
- Windows Consumption Plan
- Query to retrieve log data from VM : Kusto Query Language
- Azure Storage Explorer can be used on Linux and MacOS also.
⊕ Storage account properties at the time of creation  Eg: Replication type
- ARM template deployment  Resource Provider
⊛ 60 Dynamic IP (public) and 20 static public IP address per subscription
- IPv6 addresses can be assigned to only External Load Balancers.
- VNet peering uses Azure Backbone Infra not Gateways.
- VNet to VNet uses Virtual Network Gateway using Public IP address.
  ⟹ no bandwidth limitations.
- Azure AD Join can be used without connecting on-premises AD to Azure AD
- Custom Domain to Azure AD : verification needed by adding a
                 TXT record to the DNS settings of Domain Registrar
- Express settings while installing Azure AD connect
      PSW Hash synchronization is Enabled by default.

- Azure AD connect can be installed even when on-premise Forest name doesn't match one of Azure AD Custom domain rules.
  ↳ but you get warning that SSO is not enabled for your users.
- Password sync needs to be enabled on the on-premise domain controller and Azure portal both.

⊛ Azure Migrate is capable of visualizing cross-server dependencies and can migrate VM's together.

⊛ Geo-disaster recovery: alias is created automatically when you pair primary and secondary namespaces.

- Azure Logic Apps: You can connect Azure resources to on-premise data gateway
- Azure Appl^n Gateway can be used as load balancer as well as Web appl^n firewall
  ↳ also route traffic based on specific URL's

- Front end IP configurations are mandatory for Azure Application Gateway
  ↳ for incoming URL

⊛ Express Route traffic is not encrypted by default.

  . S2S connection: Server is not allowed behind a NAT          (NAT?)

⊛ Fraud alerts can only be enabled for MFA Server deployments.

⊛ Web Jobs are not yet supported on Linux

⊛ Authentication can not only be set from Azure AD but from App Services directly

- System assigned Managed Identities can only be assigned to the scope of Azure resource where they are created.

⊛ Always encrypted is a feature of Azure SQL Database and SQL Server.
  It encrypts data that is stored in a database table.

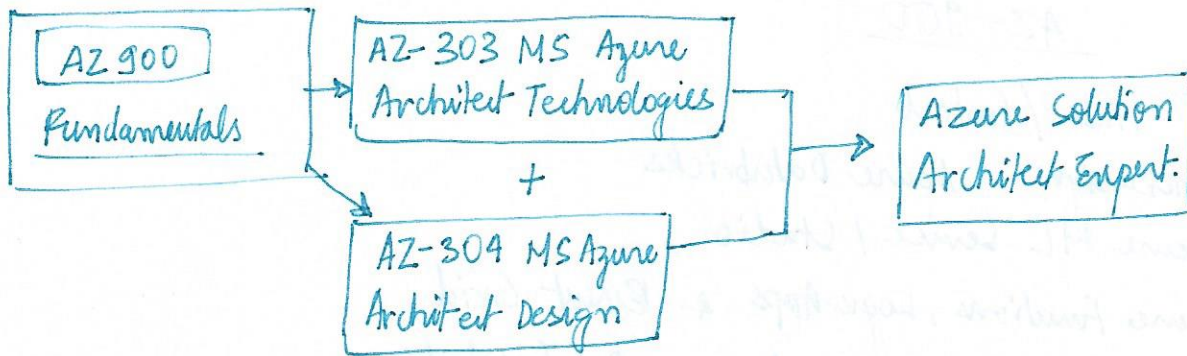⊛ All Azure storage services support server-side encryption at rest.

⊛ Cosmos DB can also be created using API's apart from Portal, CLI & P.

⊛ Azure logic apps doesn't provide solution for calling external SDK's

  Azure Storage Queue msg size is 64 kb
      use Azure Service Bus for larger size   256 kb

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│  AZ 900     │─────▶│  AZ-303 MS Azure     │──────▶│ Azure Solution   │
│ Fundamentals│      │  Architect Technologies│      │ Architect Expert.│
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         │           ┌──────────────────────┐
         └──────────▶│  AZ-304 MS Azure     │
                     │  Architect Design     │
                     └──────────────────────┘
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Azure Storage — Max 2 peta bytes store

Managed Disk — use it to manage Virtual Hard Disk attached to VM.

Archive Storage — Azure Backup and Recovery storage

Azure Synapse Analytics — (Earlier SQL Data Warehouse) Pull data from external sources, analysis → create pretty reports (BI part)

Azure Databricks

Machine Learning services → Cognitive Services. Collection of APIs ML & AI
studio & Azure ML service.

→ Infrastructure as a Service IaaS is easiest when migrating from existing hosted app to cloud.

→ Cosmos DB — sub 5 milisecond response time.

→ Azure AD Connect used to synchronize on premise AD with Azure AD

→ Azure Spending limit in Account Center to limit costs
   AAD → Basic & Premium — 99.9%    not AAD Free edition

→ Azure Free account allows users to use all the services available on Azure Platform.

→ Azure Advanced Threat Protection — monitor & protect on premise Active Directory Infra.

→ Azure AD Identity Protection — enforce Multifactor authentication.

→ DDOS protection — protect against attacks and also generate reports
   Gateways.    Local Network Gateways.

# AZ-900

IoT Hub / Central
  HDInsight   Azure Databricks
  Azure ML Service / Studio
  Azure Functions, Logic Apps & Event Grid
  Azure DevOps and Azure DevTest Labs
  Azure Solutions.

      Virtual Machine Scale Sets

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Points:

Azure Resource Manager Templates      Azure CLI   ⎱ Windows10
  "   Log Analytics                     Azure Powershell ⎰   & 
    ATM hosting                       Azure Portal     Ubuntu
    Multifactor authentication
Azure CLI & Powershell
Azure Advisor (functionality)
  Management Groups
  Azure Services Preview   ⟨ Portal access
                             Public
  Storage Account service in Virtual Machine → Blob Storage

All virtual machines within same Resource Groups have
      same permissions.

Azure Free Account you can't run unlimited Web Applications

Data transfer between storage accounts in different regions
    incur a cost. Not free.

General purpose V2 account you get charged for data stored and
    also amount of read and write operations performed for
      any data transfer activities.

Millions of sensor data ⟨ Azure Data Lake
                       Azure IoT Hub

→ NAS device     → Azure Files     Cooldown in Autoscale     - Powershell command
SMB          → Azure Sentinel      custom health probes     - CLI
CIFS         → Azure Appln Gateway ←                 disk encryption
→ DMZ      → ARM templates

Security     → VPN Gateway < Policy based     IP address ranges.
                               <u>Route based.</u>     IP   /16
SCOM Alert                                      IP   /24

         ⌐ Azure standard SKU          OAuth 2.0
         − Load Balancer (All scenarios)    authentication token
⊛ **Azure Relay**
⊛ Point to site VPN                               $11
    V1 SKU App Gateway             ⊛ **Learn Powershell**
    Privileged Identity Management           **commands.**
    SQL Database in Elastic Pool           * Event Grid.
                                          LUIS
⊛ Powershell commands eg. RBAC role     COSMOS DB
                                    ↳ Recovery Point Objective
⊛ Kubernetes cluster limitations.          ↳

   · Azure Application gateway → use .pfx
                                  certificate
   Site to site VPN ⊛ on Premise VPN.

 − Route table
 − Azure Site Recovery − Windows Updates is
                               required.

 −Transient Fault Handling (Read Exponential
                              back-off)

 −Windows Certificate Store

TF Docker kubernetes