**70-534 Architecting Microsoft Azure – Udemy**

Check latest exam requirement objectives consistently.

**Study Plan:**

How many hours am I going to give to this each week? GMAT/School/CCNA. Don’t start and have a break. Keep going. Don’t cram.

Create a study plan, $165.00 per exam. Exam can be proctored from home. 2 and a ½ hours with 40 questions. Look at latest test changes. Changes frequently. 1 month of dedicated studying. Official book from library and study test were not the best. One week of extra buffer.

Scenario questions. Different question types. Focused around hybrid solutions. Some vague questions. Fair test.

**ASM (Azure Services Model) – classic portal vs Azure Resource Model (ARM)** – newer portal with deployment model. Some things you can not do and some things are not easier in either portal. Default will be the new portal. Slowly migrating off the old portal

ARM templates/ARM backups were recently added. UDR (User Define Roots, Application Gateway, Azure Storage encryption, Azure Disk Encryption, SQL database TDE, Azure Scheduler,

**Network Services – Objective 1:**

**GFS (Global Foundation Services) called MCIO (Microsoft Cloud Infrastructure and Operations) Datacenters:**

Azure is all over the globe. Products are a ton.

**HA** – architected to stay up and running. 99.999% availability uptime. Two or more VM’s in a set are 99.95% availability. 10% credit or <99% is 25% credit.

Datacenters support all of Microsoft’s online businesses. Large as 3 cruise ships. Over 100 datacenters in 30 regions and 11 geos. NA, EU, AS, SA

Geo is a country but larger than a country. China region is special as a china company runs the datacenter. Needs a separate Azure subscription.

Region are paired with other region. NA/SA for example. DC’s are updated only one pair at a time. Regions don’t support all resources. Australia DC is only available to them. Same for India. Keeping data in region. 300 miles between DC.

**Triple Redundant storage** – 3 times replicated in that region. Or can elect up to 6-times and across geos. Brazil is paired with US in one instance. Pairs are in same geo for data protection laws.

**Racks** – servers are arranged in groups. Two blades per 1U. Height total of 52U. 96 servers on a single rack which would be 48U. JBOD (Just a Bunch of Disks (up to 60GB). 20 racks make up a cluster.

All pre-wired. Clusters have the same hardware. Cluster can have close to 1,000 servers.

**ITPAC** – container of servers, built as one unit and shipped to a Microsoft datacenter for plug and play

Water, power, electricity

**Active Directory:**

Identity, Roles, and Permission, Company directory, Password Policies

**AD DS** – Domain Services, employees log into windows

**AD LDS** – light weight domain services

**AD CS** – Certificate Services, PKI (Public key Infrastructure)

**AD FS** – Federation Services with SSO

**AD RMS** – Rights Management Services, protect documents

Not a replacement for on-prem AD. Azure

Azure AD is there to extend AD from on-prem AD to cloud. Identity management centered, no hierarchical object model. Basic Service. Dynamic or Static IP’s

No private IP to VPN. CNAME records can be used to point your DNS to the Azure domain. A record for DNS model. 4096 private IP per VNET, 60 public dynamic IP’s, 20 public static IP’s first 5 are free and .004/hr. 500 VM per VNET. 50 VNET

ACL’s are for endpoints not vnet/subnets. NSG (Network Security Groups), powerful than ACL. Blacklist IP’s with ACL. You can have up to 50 ACL per endpoint. Ordered rule by priority. Packets get filtered before reaching the VM. Doesn’t take CPU cycles

NSG contain ACL rules. Can be associated with vnets, subnets, or VM’s. NSG ACL applie to the VM inside the subnet. Can only be applied in region. Have priorities

**Resource Groups:**

PaaS started here. Added IaaS later.

Operate groups of VM’s at once. Can’t nest groups, resource can be part of one group

No limits to resources. Can’t rename.

**IP addresses/User Groups:**

Routing tables can be created. VPN through S2S VPN. Or blackhole loops.

These have to be defined and not automatically done.

**Azure Compute:**

Web, worker, VM role.

App Service:

* web apps (shared/dedicated) managed. Any language, powershell, etc. continuous integration
* connect to other platforms, HA, security, application templates, Streamlined visual studio
* mobile apps (IOS, Android, HTML5). SSO. Azure AD FS. Build offline ready apps, push notifications, autoscale, staging environments, continuous integration
* api apps (migration of existing API). CORS (easy consumption, protocol to talk to each other over domains). Access controls, integration with logic apps, integration into visual studio.
* logic apps (build workflow logic). If this, then that. Zapier, IFTTT, can be designed in browser, templates

A0-A4 (extra small to extra large)

A5-A7 – Larger databases memory intensive

A8-A9 – network optimized (messaging)

A10-A11 – compute intensive.

D Series: SSD

* D1-D4 – websites
* D11-D14 – memory intensive

Dv2 Series:

* SSD
* D1\_v2- everyday applications
* D11\_v2-D15\_v2 – large database

Cloud service – PaaS. You can install other things on this VM. Remote in.

* Web role – public endpoint, IIS, HTTP & HTTPS
* Worker Role – No IIS, No public endpoints, computation/data management. Background jobs.
* Perform tasks. Communicate between messaging queues. Configuration set up with instances.
* Don’t create VM. VM is created by configuration file. Updates switchover instances.

**VM role:**

Multiple predefined images. Windows Server 2012 R2. Looks like a physical server. OS running in a VHD. 400 + options for Linux. Computers/applications.

VM sizing:

Basic vs standard. Compute intensive. Price is a factor.

A-series – general purpose. Optimized to run at high performance

D-series – designed for Performance. SSD, Faster processor and memory

DS-series – premium storage instead of temporary storage. Same pricing to Dv2

Dv2-series – more powerful. 33% faster. Premium storage (faster io access)

G-series – memory intensive application, faster processor and more disk space, 2 time memory, 4 times on storage. Premium storage. Graphic processor

Basic tier doesn’t have load balancing, etc.

**Availability set** – two or more VM’s running under a load balancer

**Fault domain (FD)** – rack of servers. Entire rack of servers fails the whole rack is affected

**Update domain** – define grouping of servers that can be updated as a set. Can be updated individually and doesn’t bring the application down

**VPN & Express Route:**

Connect to a network remotely. Encrypted traffic. Secure tunnel. Connects to offices together but needs a gateway on both ends

P2S (Point to Site) – dev on a database with only one person needing access. To be able to use it as it is local. 100 Mbps, 200 Mbps. Uses SSTP protocol.

S2S (Site to Site) – entire network can be connected to Azure. Hits the Gateway first. Speed Is limited. 100 Mbps. Performance sku only offers 200 Mbps. Outbound has cost associated with it. IPSEC or RRAS

ExpressRoute – More expensive. Doesn’t use public internet. Private fiber connection. IXP by ISP. A lot faster. 500 Mbps, 1 Gbps, 2 Gbps, 50,000 a month. Servers could be hosted at the IXP. Another is MPLS. Cost more with multi locations. Know the differences between P2S, S2S and Express Route

**Azure Services:**

Cisco CSR at the marketplace with 4vNIC. Apache, PHP, Linux options.

Know all the servers in terms of networking like VPN, S2S, Express Route.

Load Balancer: spreads the load out to other servers within the pool.

Round robin – cycling through the servers one by one. Monitors every 15 seconds.

Sticky session – same server responding to the user. Single point of failure

Vertical Scaling – increasing resources up.

DNS resolution points to the public IP of the LB.

Internal Load balancers – access services behind the scene. NAT with the internal load balancers to help security.

Application Gateway: Web based LB – HTTP/HTTPS. Firewall option. Cookie based affinity. SSL offloading. URL routing. Can have the same websites behind the LB. Application matched to more than 2 VM’s. LB operates at layer 4. Site behind the actual LB

Traffic Manager – same application can run in different regions across the globe. Helps reduce latency. DNS local. DNS points to traffic manager. No global DNS in this case. Refresh of information in the cache. Checks on the health of the locations. Couple minutes if a node fails to revert to the failover instance. Does support round robbin. Primary/Secondary. Global/region routing of traffic. Nested profiles allows you to point one top-level traffic manager profile to another traffic manager profile to combine two different load balancing methods.

**Azure Media Services:**

Ondemand streaming media services. Live events. Cloud based encoding. Upload video content and encode in multiple formats at scale like DRM and CDN.

**Azure CDN:**

VM to send static content that are closest to the user. Video/images/audio/css/js. Distribute files closest to the region as well. Increases performance of application by distribution CDN places static content closest to it’s users.

**Azure AD:**

Manages user access/identify management. Tying in corporate AD. Identity management of users. Multi-Factor like RSA.

**Microsoft Reddis Cache:**

High data store. Doesn’t have information stored in the database. Basic, Standard or Premium. Databases can be split into different databases. Temporary information or information that is searched through frequently. Sits in front of the database or in front of the Load balancer. You can also have the cache on the web server if needed.

**MultiFactor Authentication:**

Phone based authentication methods. SMS/call. SDK methods to build into your application.

**Azure Service Bus:**

Messaging platform to send messages between applications. Disconnected communication between applications like a cell phone.

Assignment 1 – create a virtual network, not public available. Add two basic web VM’s in available set. Configure point to site VPN.

**Secure Resources – Objective 2:**

AD as a secure option. AD Connect or DirSync

**Managed Identities:**

Azure AD. Multi-tenant cloud based identity. Keep users not seeing users from another company. SaaS model. IDMaaS – Identity Management as a Service

Handles 5 million organizations with this detail. 1 billion authentications every day. 1 Trillion authentications since Azure AD was put in place. To work with user applications. SSO and multi-platform support and multi-factor. 99.9% uptime.

Graph API:

Allow developrs to build web and mobile apps. REST API and can integrate with any API

CRUD, Customize, Read, User, Delete. JSON. All over HTTP. Need an authentication token. Query functions. Check changes between two time periods

OAUTH/OPENID – Opensource for authentication with untrusted clients. Trusted client would be a server. Untrusted is like a phone. Requires token. Can expire. Can be integrated into the backend network

**Hybrid Identities:**

Many environments have onpremise and in the cloud. Identity for all applications no matter where the infrastructure resides. Security, cost savings, legacy apps, requirements.

SAML claim. (SAML – Security Assertions Markup Langugage). Proof of their identity. Tokes are signed. First, requests SAML token. Issues token to client along with proof key. Provider signs token. Customer needs to sign the token via proof key. Application now trust its

Azure AD FS:

Federated identities. Turning over responsibility to a third party. AD FS passes it onto your AD. Avoids DirSync. Can keep all your identities in your managed premise.

AD Application proxy:

SSO for remote employees. Allowing access inside and outside your network. Not a vpn. Authenticates through the proxy and the proxy gets in your local network. Have to install a connector inside the network. All traffic goes through Azure. AADSync, DirSync, and Azure AD Connect are ways for synchronizing onpremise to Azure AD