

Azure Masters Batch 3 - AZ-900 Azure Fundamentals - Day 1

30 July 2022 10:00

About Rahul Joshi:

22 Years exp, 15th year as Microsoft certified trainer & AWS Authorized instructor

- Helping customers add Application Modernization capabilities by Replatforming ASP.NET sites to Azure App Services, Rearchitecting of monolithic applications to microservices or containers.
- Reengineering of legacy applications to cloud-native apps with improved user experience.
- Designing cloud strategy, solution design, cloud adoption frameworks, app modernization and cloud migration.
- Develop Proof of Concept by working closely with Microsoft and Amazon Web Services and design frameworks for cloud adoption and Enterprise Architecture, Cloud Infrastructure/ Migrations.
- Responsible for Migration to Microsoft Azure (Brownfield and Greenfield Projects). In-Premise To Cloud Migration and Storage Migration.
- Perform Application Readiness Assessment, an investigation at application level in preparation for cloud deployment, to look at issues that will either block or detract from the application's abilities to fully utilize the cloud, then act on this report to ensure cloud readiness.
- Designing applications for scalability
- Migrating to PaaS & Container Architecture, Migrating from Traditional .NET Application Web Apps

"Executed more than 580+ Trainings engagements on Microsoft Azure for more than 220+ clients"

Google Drive Link:

https://drive.google.com/drive/folders/181ebdbVLk5xpLu5ArR_BFWeM9b3N2x3?usp=sharing

Recording:

Please Note, Post Session Completes Zoom Recording Link will be shared on WhatsApp, Download it from Zoom Directly. It will not be uploaded on Google Drive

One Note Documentation:

<https://1drv.ms/u/s!Aht-oGFG3XwWgagy2dnZHuXQmk0wkg>

My Drive > Microsoft Azure Master Batch 3	
Name ↑	Owner
Course Outlines	me
Data	me
E Books	me
Official PPTs	me
One Note Documentation	me
Redeem Azure Pass	me

How To Redeem Azure Pass

1st Step - Prerequisite:

Create a FRESH Outlook ID only for this Azure Training. **Remember the Password**, **DO NOT USE EXISTING OUTLOOK OR GMAIL OR ANY OTHER ID OR even Official ID**

2nd Step - Redeem

1. On your computer, open Chrome.
2. **At the top right, click More. New Incognito Window.**
3. <https://www.microsoftazurepass.com/>
4. Click In the start
5. **Please Login with your NEW Outlook ID** which you created above;
This ID SHOULD NOT BE USED BEFORE FOR ANY AZURE SUBSCRIPTION. DO NOT USE COMPANY ID.
6. In the next screen you will be asked to put the Promo code which is given by Rahul Joshi above in this email you will get individually. Click the button Claim and Wait 2 minutes.
7. Then a form will come to fill in basic details, your email id, your phone, city, pin code and in company name put self or your full name etc.
8. click submit and then accept the agreement button and submit. Wait for 5 minutes and you will be redirected to the portal.azure.com website

DO NOT REFRESH THE PAGE IN BETWEEN, YOUR PROMO CODE WILL GET INVALID.

AZ-900 Azure Fundamentals

<https://docs.microsoft.com/en-us/certifications/exams/az-900>

Candidates for this exam should have foundational knowledge of cloud services and how those services are provided with Microsoft Azure. The exam is intended for candidates who are just beginning to work with cloud-based solutions and services or are **new to Azure**.

Azure Fundamentals exam is an opportunity to prove knowledge of **cloud concepts**, **Azure services**, **Azure workloads**, **security and privacy** in Azure, as well as **Azure pricing and support**.



Tip

- Download the **AZ-900 study guide** to help you prepare for the exam
- View **free sample questions** to help prepare for this exam
- Demo the exam experience by visiting our **Exam Sandbox**

Study Guide

<https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE3VwUY>

All the points in the above study guide are helpful to pass the exam. Do not study any topic outside the study guide from Exam Point of view, but for interviews and for real world, many more topics are added based on interest.

Functional groups

Describe cloud concepts (25—30%)

Describe cloud computing

- Define cloud computing
- Describe the shared responsibility model
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model

Describe Azure architecture and services (35—40%)

Describe the core architectural components of Azure

- Describe Azure regional, regional pairs, and sovereign regions
- Describe availability zones
- Describe Azure datacenters

Describe Azure management and governance (30—35%)

Describe cost management in Azure

- Describe factors that can affect costs in Azure
- Compare the Pricing calculator and the Total Cost of Ownership (TCO) calculator

Google Drive Link:

https://drive.google.com/drive/folders/181ebdbVLk5xpLu5ArR_BFWeM9b3N2x3?usp=sharing

Official PPTs of Microsoft

My Drive > Microsoft Azure Master Batch 3 > Official PPTs

Name ↑

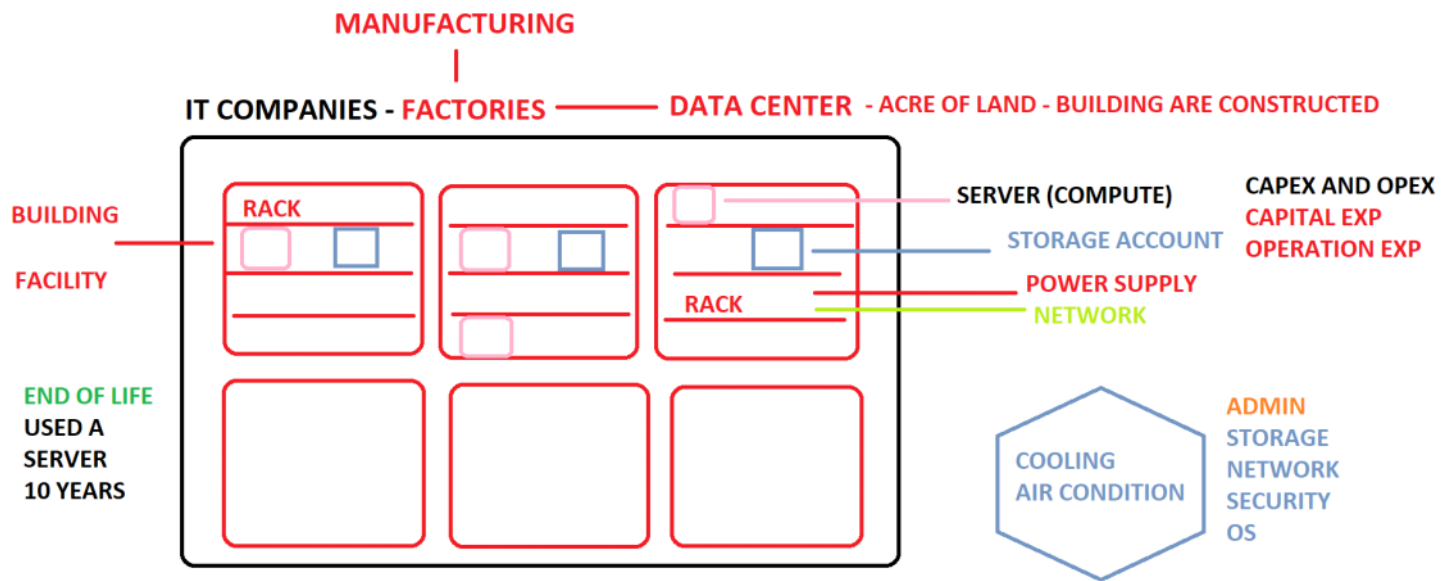
AZ-900T0X-ENU-PowerPoint.zip

Azure Subscriptions

1. Organization Subscription - That Organization adds you to their Subscription - We don't have to Pay
2. Azure FREE Tier Subscription - Microsoft Gives 1 Month of FREE Azure Usage for testing purpose and after 1 Month you are given choice to convert that to PAY-AS-YOU-GO, after 1 month, you will start paying for what you use, but for 1st month it is FREE
<https://azure.microsoft.com/en-in/free/>
3. PAY AS YOU GO: - I have a Debit Card, I have already used FREE Subscription of 1 Month, but still I want to practice, I am ready to pay the charges that are incurred.
4. Student Subscription - If you are part of a College or Student of a school, you can provide ID card and Microsoft gives 12 months of FREE Access to Azure - <https://azure.microsoft.com/en-us/free/students/> - 100\$ FREE Usage
5. **Azure Passes** - Microsoft GOLD PARTNER OR LEARNING PARTNERS can give Azure Pass, which can give 50\$, 100\$, 200\$ FREE Credit to People

Actual Training of AZ-900 Starts now!!

Why Cloud?



High Capex and regular OpEX, with high competition, low profits, project bidding with less margin

Amazon - www.amazon.com

People started complaining

1. Website is slow
2. Website crashes
3. payments fail
4. order can confirmed

Availability, Scalability, Reliability, Agility

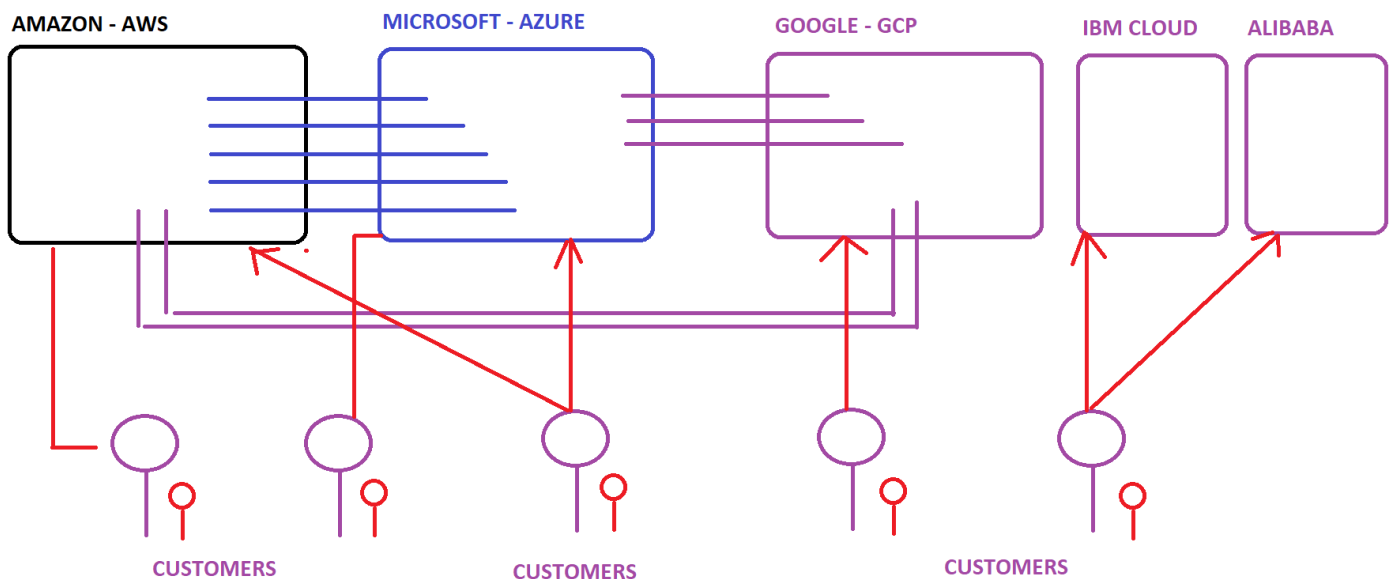
Birth

**AWS
AMAZON
WEB SERVICES**

INTELLEGINES
+
MONEY POWER

IAAS - INFRASTRATURE AS A SERVICE
DATA CENTERS - IN US REGION

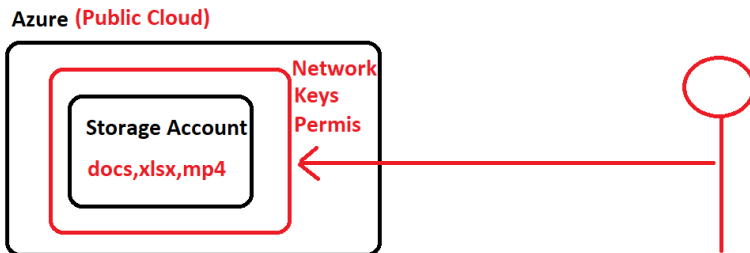
Cloud Computing = SECURITY



Cloud Models (EXAM)

1. Public Cloud

- Your Entire Infra is going to be on the Internet, people from anywhere in the world with right credentials can access the data in the Public Cloud (Typically, Microsoft Azure, AWS, GCP, IBM Cloud are used as "Public Cloud Providers").
- Public cloud is best for those organization who does not want to host sensitive data in the cloud, data where government rules and regulations, compliance does not matter



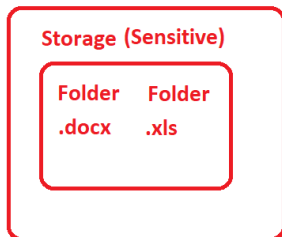
The data in the cloud is also protected, but STILL it is in the Public Domain and any data which is highly sensitive or classified, we should not keep it on the public cloud.

2. Private Cloud (Cloud here means on-premises datacenter)

Private Cloud is a datacenter within the organization, this data center is within the premises of the organization and typically, all the data when it is within the premises or within the org is considered safe as public (people from outside) cannot access this data. This is perfect for data which is highly sensitive and data which is governed by rules and regulations.

Private CLOUD

Organization (Company Premises)



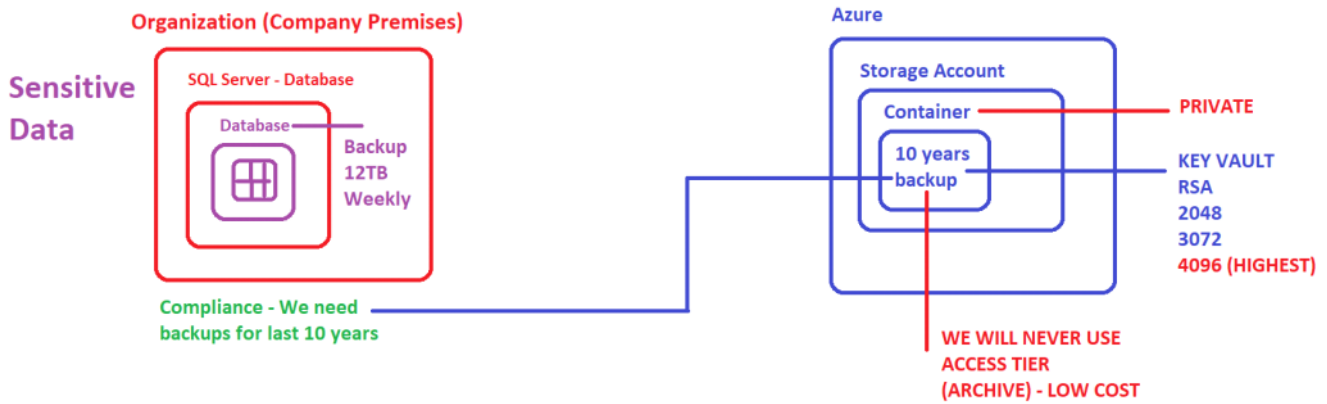
Azure (Public Cloud)



By default when we talk about private cloud, the data is safe within the organization, but sometimes, we need to pull this data in the cloud and that is possible using network related services in azure, for example, **vpn connection**, **site to site vpn**, **express route** all these strategies can be used for connectivity.

- Hybrid Cloud - Mix of Both, Data which is sensitive stays in Local Cloud (local datacenter) and data which is not sensitive goes to the Public Cloud (Azure)

HYBRID CLOUD



Best of Both the worlds, data which is sensitive is on the cloud and data which can help save cost, and is "redundant" and is taking space and compute locally can be offloaded to cloud.

Azure Pricing Calculator:

<https://azure.microsoft.com/en-in/pricing/calculator/>

Products Example Scenarios Saved Estimates FAQs

Select a product to include it in your estimate.

Search products

Featured

- Compute
- Networking
- Storage
- Web
- Mobile

Virtual Machines

Provision Windows and Linux virtual machines in seconds

Storage Accounts

Durable, highly available and massively scalable cloud storage

Azure SQL Database

Managed, intelligent SQL in the cloud

App Service

Quickly create powerful cloud apps for web and mobile

Azure Cosmos DB

Fast NoSQL database with open APIs for any scale

Azure Kubernetes Service (AKS)

Build and scale with managed Kubernetes

Storage Accounts

REGION: Central India

TYPE: Block Blob Storage

TIER: Standard

STORAGE ACCOUNT TYPE: General Purpose V2

ACCESS TIER: Hot

REDUNDANCY: LRS

Capacity

100 TB

Savings Options

Save up to 38% on pay-as-you-go prices with 1-year or 3-year Azure Storage Reserved Capacity. [Learn more about Azure Storage Reserved Capacity pricing.](#)

☒ Pay as you go

☐ 1 year reserved

☐ 3 year reserved

\$2,007.04

Average per month (\$0.00 charged upfront)

= \$2,007.04

Average per month (\$0.00 charged upfront)

Storage Accounts

REGION: Central India TYPE: Block Blob Storage TIER: Standard STORAGE ACCOUNT TYPE: General Purpose V2

ACCESS TIER: Archive REDUNDANCY: LRS

Capacity

100 TB

Early deletion fees may apply and are not included. [Learn more about early deletion fees.](#)

Savings Options

Save up to 38% on pay-as-you-go prices with 1-year or 3-year Azure Storage Reserved Capacity. [Learn more about Azure Storage Reserved Capacity pricing.](#)

☒ Pay as you go

☐ 1 year reserved

☐ 3 year reserved

\$204.80
Average per month
(\$0.00 charged upfront)

\$204.80
Average per month
(\$0.00 charged upfront)

Cloud Benefits: (Interviews)

High Availability:

Availability = Available = Ready To Serve = My Presence is there

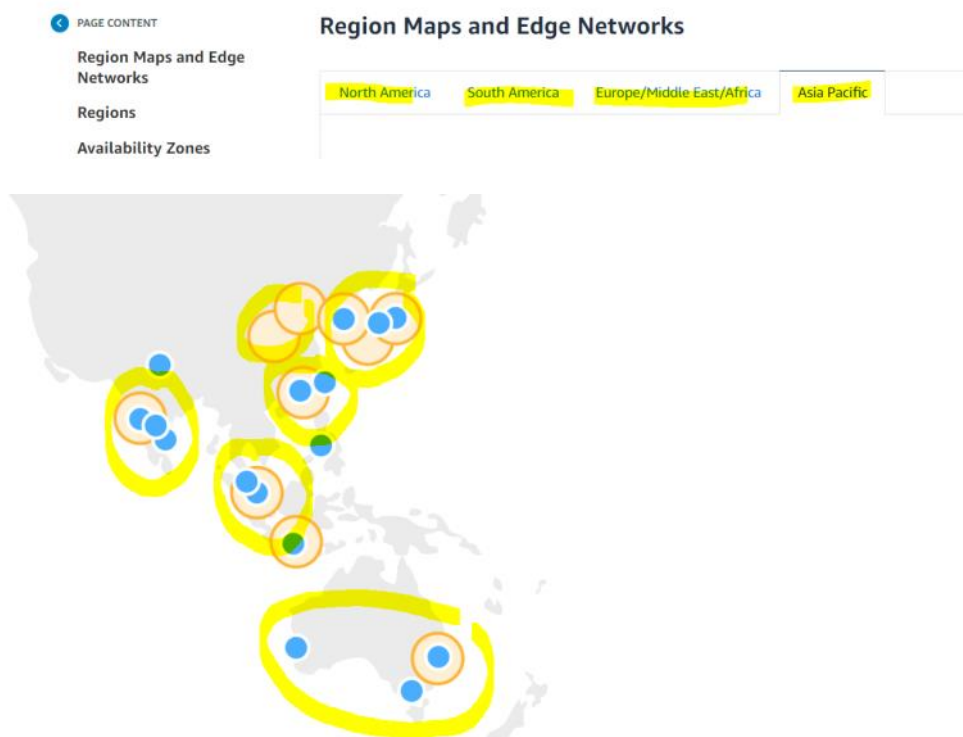
High = Always = $365 \times 24 \times 7$

Microsoft, Amazon or Google has to maintain High Availability in their infrastructure. As if availability goes down, it will lead to customer satisfaction issues.

AWS Regions

https://aws.amazon.com/about-aws/global-infrastructure/regions_az/

Regions and Availability Zones



Map Key		
	Regions	
	Edge locations	
	Mainland China (Beijing) Region	Mainland China (Ningxia) Region
	Availability Zones: 3	Availability Zones: 3
	Learn more at www.amazonaws.cn	Learn more at www.amazonaws.cn
	Asia Pacific (Singapore) Region	Asia Pacific (Tokyo) Region
	Availability Zones: 3	Availability Zones: 4
	Launched 2010	Launched 2011
	Asia Pacific (Sydney) Region	Asia Pacific (Seoul) Region
	Availability Zones: 3	Availability Zones: 4
	Launched 2012	Launched 2016
	Asia Pacific (Mumbai) Region	Asia Pacific (Hong Kong) Region
	Availability Zones: 3	Availability Zones: 3
	Launched 2016	Launched 2019
	Asia Pacific (Osaka) Region	Asia Pacific (Jakarta) Region
	Availability Zones: 3	Availability Zones: 3
	Launched 2021	Launched 2021

Availability Zone = Data Center

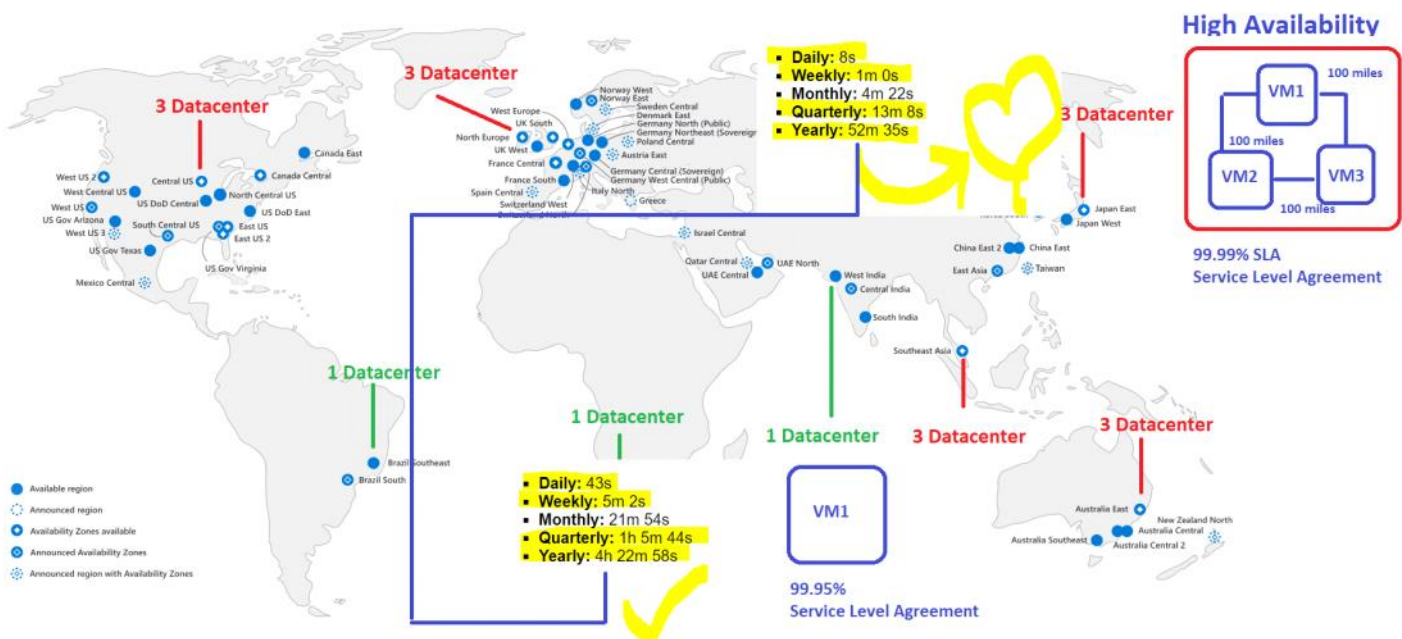
In US

Map Key		
	Regions	
	Edge locations	
	US East (Northern Virginia) Region	US West (Northern California) Region
	Availability Zones: 6	Availability Zones: 3*
	Launched 2006	Launched 2009
	Local Zones: 10	
	Launched 2020	
	GovCloud (US-West) Region	US West (Oregon) Region
		Availability Zones: 4

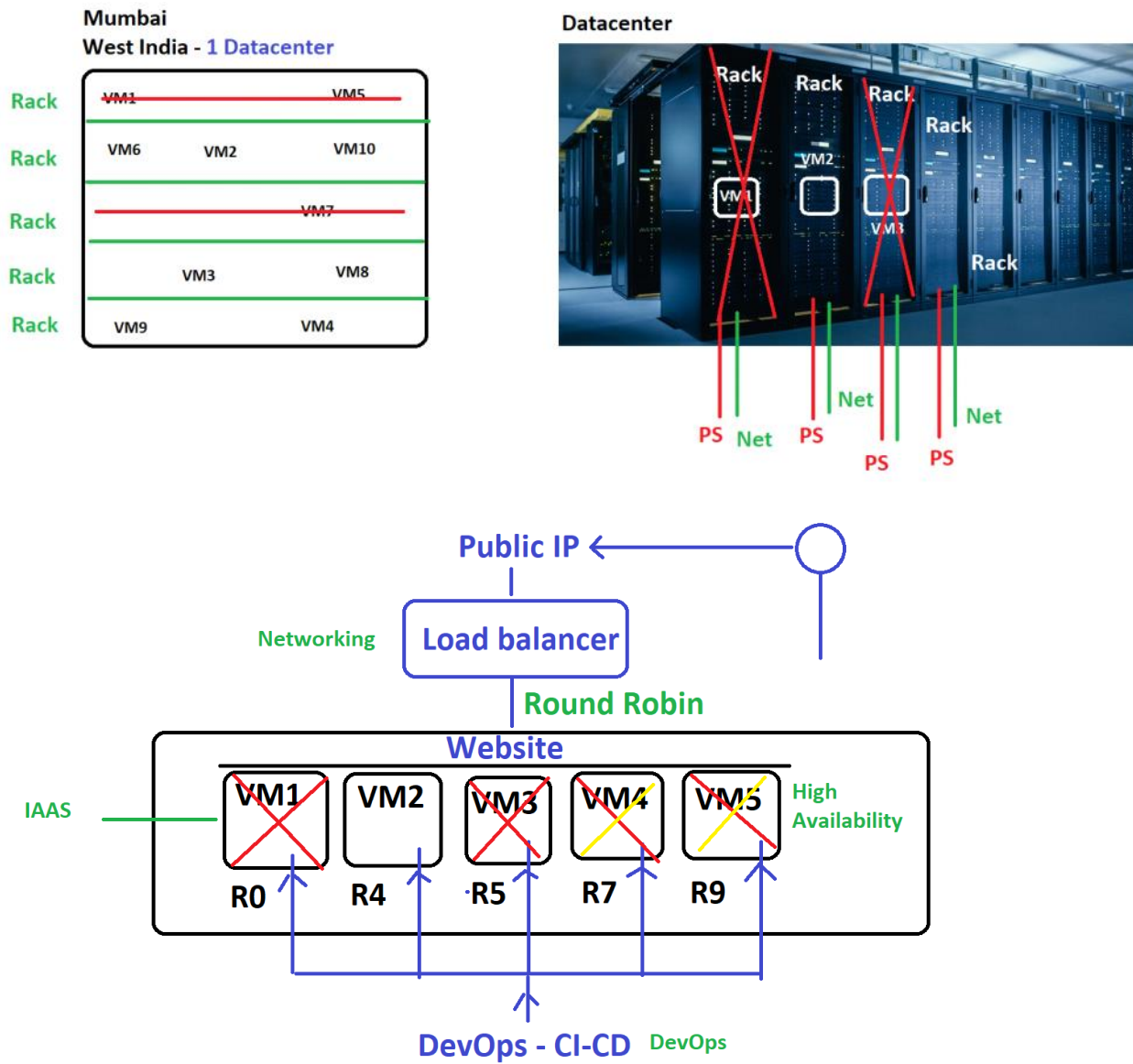
In AWS, Maximum 6 Datacenters and minimum 3 Datacenters are there for HIGH AVAILABILITY

SLA Calculator

<https://uptime.is/>



Availability Set



Interview Questions?

What is the difference between Availability Zone and Availability Set

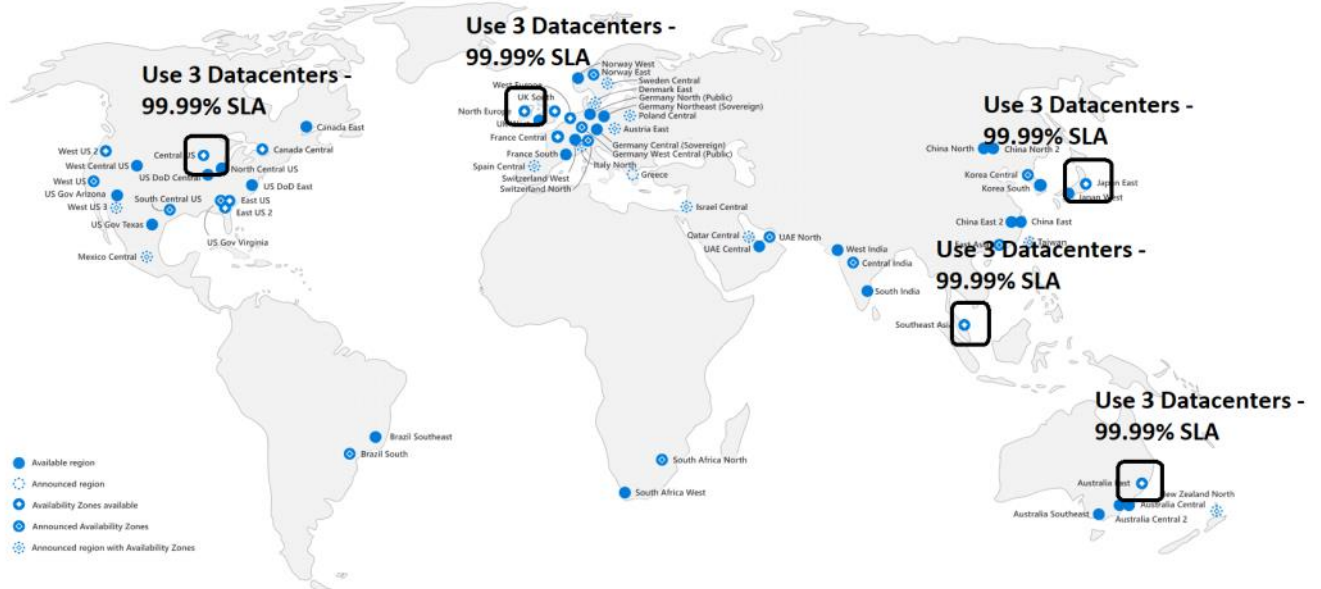
3 Datacenters = Availability Zone - 99.99% SLA

1 Datacenter = Availability Set - 99.95% SLA

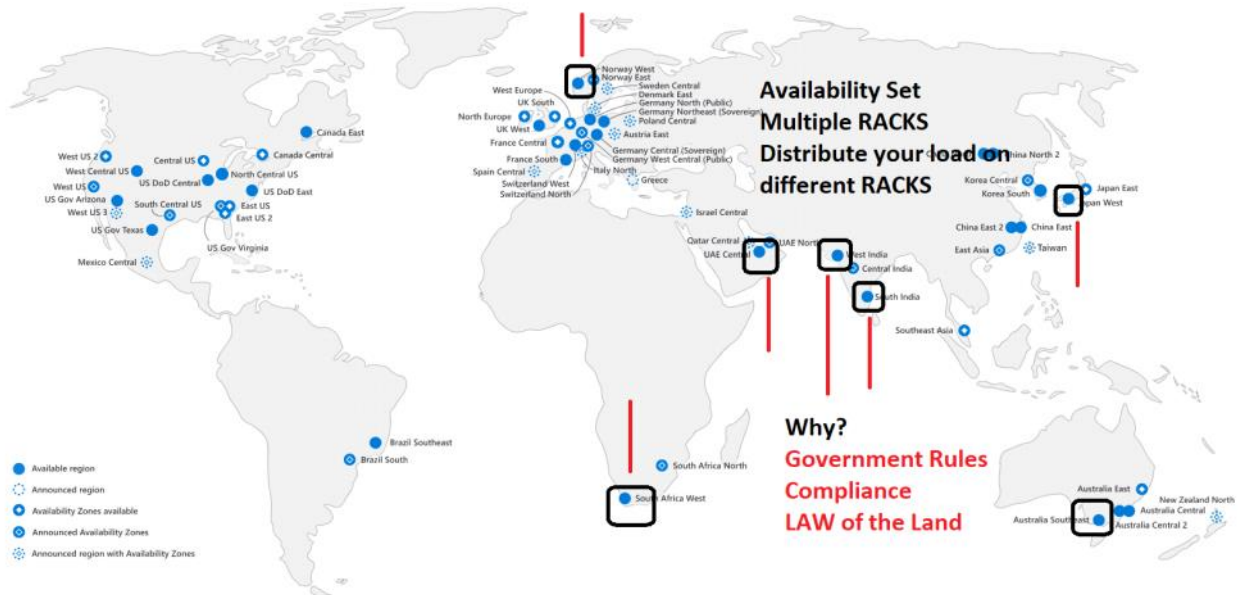
When you configure the Azure Service, that time only you should tell Microsoft Availability Zone of Availability Set, But if you choose Mumbai, Chennai then Availability zone Option does not come, as these regions only have 1 Datacenter

What are the different ways in which we can configure Azure Services for High Availability?

Pattern 1



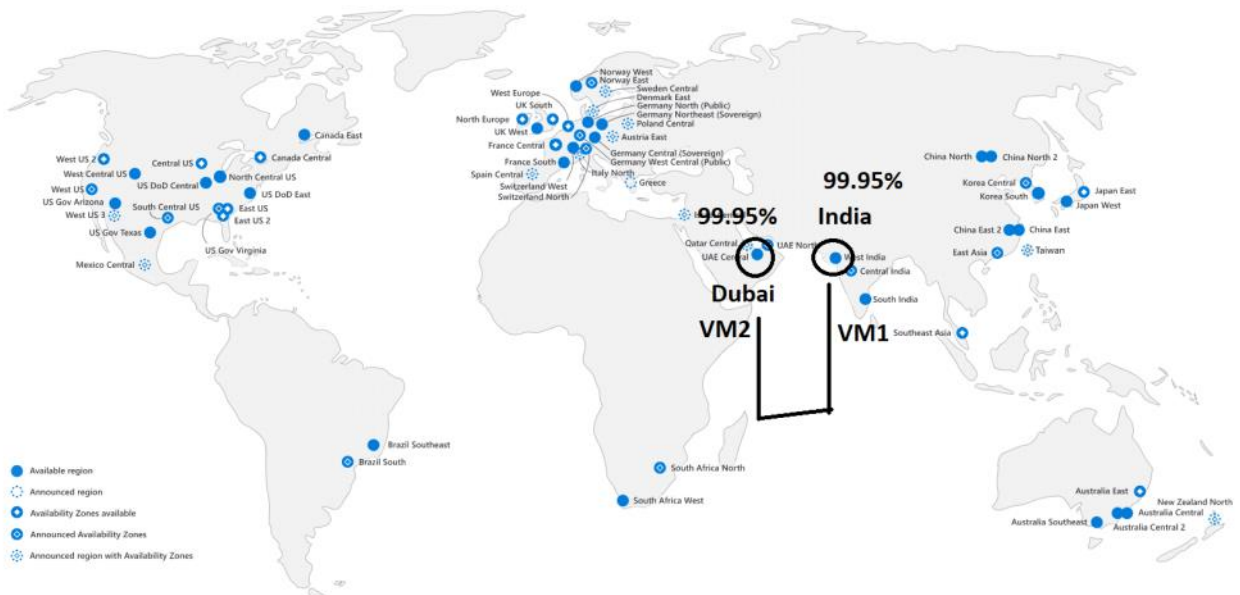
Pattern 2



Pattern 3



Pattern 4



<https://www.azureedge.net/>

Mobile Internet

Middle East ☒ Check all

☒ UAE North

Closest Datacenters

Region	Average Latency (ms)
UAE North (Dubai)	1002 ms

Closest Datacenters

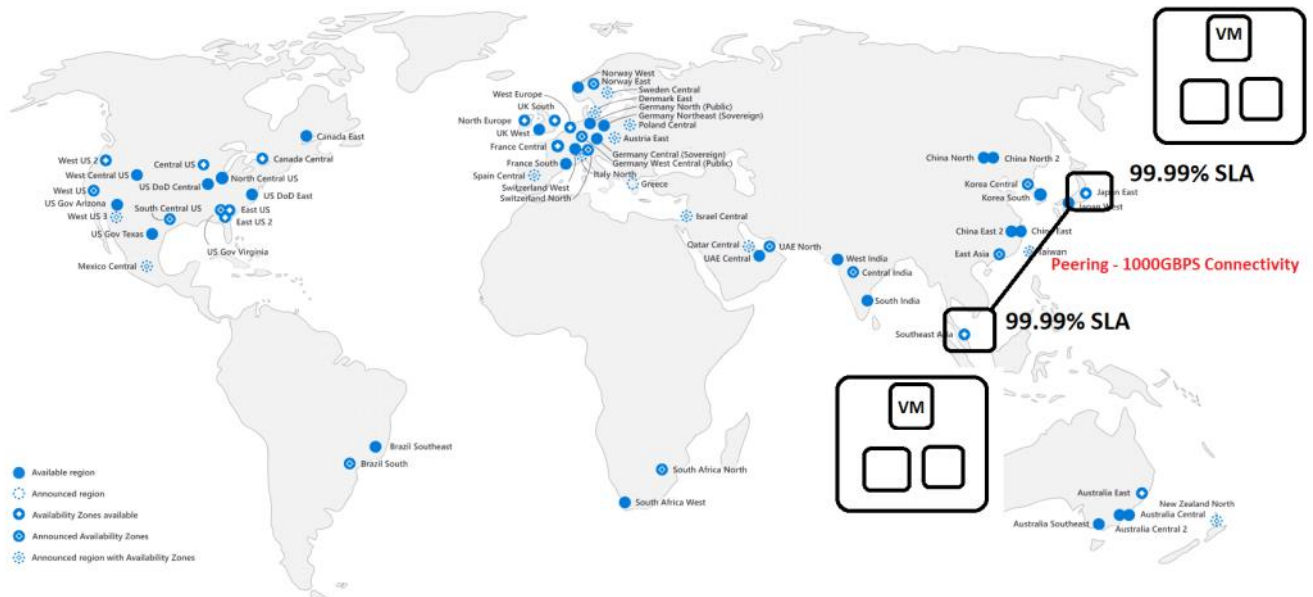
Region	Average Latency (ms)
UAE North (Dubai)	420 ms

Broadband

Latency Test

Geography	Region	Physical Location	Average Latency (ms)
Middle East	UAE North	Dubai	54 ms

Pattern



What are the factors in choosing a Region?

1. Law Of the Land, Government Rules and Regulations, Compliance
2. Proximity To the Customer (How Close the customer is to the Datacenter)
3. 3 Datacenters vs 1 Datacenter - 99.99% SLA vs 99.95% SLA
4. Cost - Cost is different per Region, Where demand is more cost is Less, When Demand is less, cost is more
5. Service availability - Not All Services are available in All Regions

Pune, now has 3 Datacenters

<https://azure.microsoft.com/en-in/global-infrastructure/geographies/#geographies>

Asia Pacific Australia China **India** Indonesia Japan Korea Malaysia New Zealand Taiwan

Regions	Central India	South India	Southcentral India
	Start free >	Start free >	Start free >
LOCATION	Pune	Chennai	Hyderabad
YEAR OPENED	2015	2015	Coming soon
AVAILABILITY ZONES PRESENCE	Available with 3 zones	Nearest region with zones coming soon: Central India	Coming soon

Scalability

Scalability = Scale = measure = Ability to scale

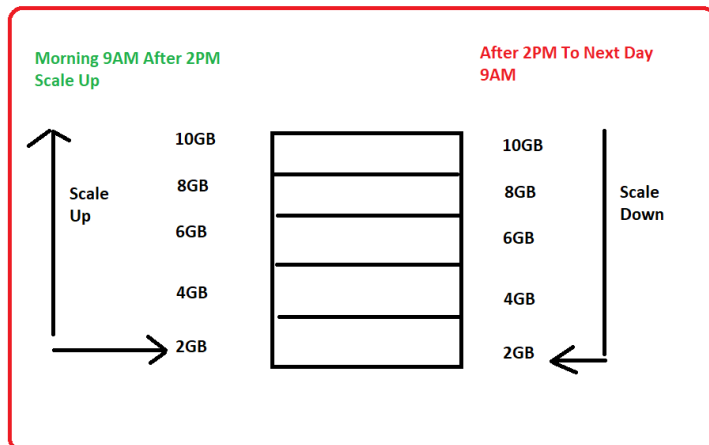
Scalability

- Scale Up & Scale Down - Vertical Scaling

- Scale Out & Scale In - Horizontal Scaling

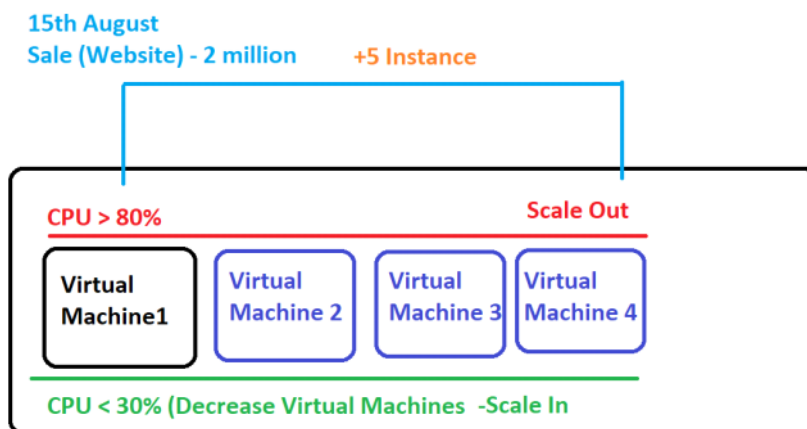
Scale Up & Scale Down

Automation Account - Schedule - Add Powershell



Availability

Scale Out & Scale In



Interview Question

What is the difference between Scalability and Elasticity?

Scalability = Planned - 15th August, Diwali, Eid, Vacation Time (Load) - Planning

Elasticity = Ad-Hoc, Sudden Spike, Today at 11AM, we are seeing CPU going above 80%, Add more Power

Global Reach

DSN Address - From where is the customer coming and automatically routes to the datacenter close to the customer

Global Reach
Emirates - Global

DB - R/W (multiple locations: West US 2, West Central US, US DoD Central, South Central US, West US 3, US Gov Texas, Mexico Central, Canada Central, Canada East, North Central US, US DoD East, East US 2, US Gov Virginia, Brazil Southeast, Brazil South, West Europe, North Europe, France Central, France South, Switzerland West, Switzerland North, UK South, UK West, Germany Central, Germany North (Public), Germany North (Sovereign), Germany Northeast (Sovereign), Poland Central, Austria East, Germany Central (Sovereign), Germany West-Central (Sovereign), Italy North, Italy South, Greece, Israel Central, Qatar Central, UAE Central, South Africa North, South Africa West, Australia East, Australia Central, Australia Southeast, Australia Central 2, New Zealand North, China North, China North 2, China East 2, China East, East Asia, Taiwan, Southeast Asia, South India, West India, Central India, India North, India South, Korea Central, Japan East, Japan West)

<10ms Writes happen everywhere

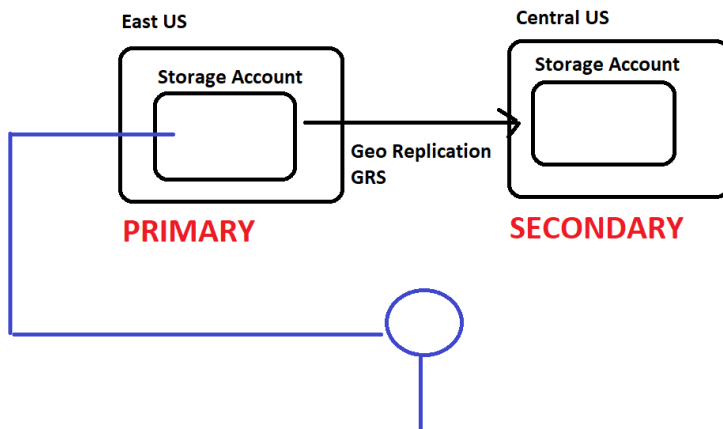
Feature
Azure : CosmosDB
AWS: DynamoDB

Insert

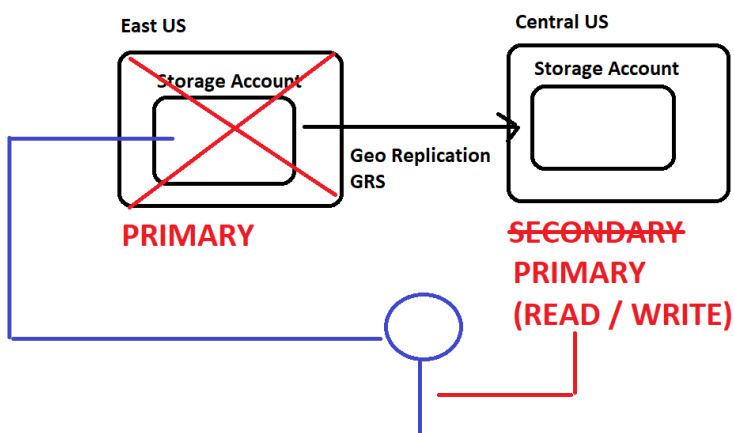
Legend:
 ● Available region
 ○ Announced region
 ○ Availability Zones available
 ○ Announced Availability Zones
 ○ Announced region with Availability Zones

Fault - mistake - something going wrong - un-intended

FAULT TOLERANCE



FAULT TOLERANCE



Fault Tolerance means, tomorrow there could be intentional or un-intentional ways in which your service can go down, example - Patch got installed, server reboot, Someone by mistake Shutdown the server, power outage, disk failure, network downtime.

So, how this fault can be handled

End of Day 1