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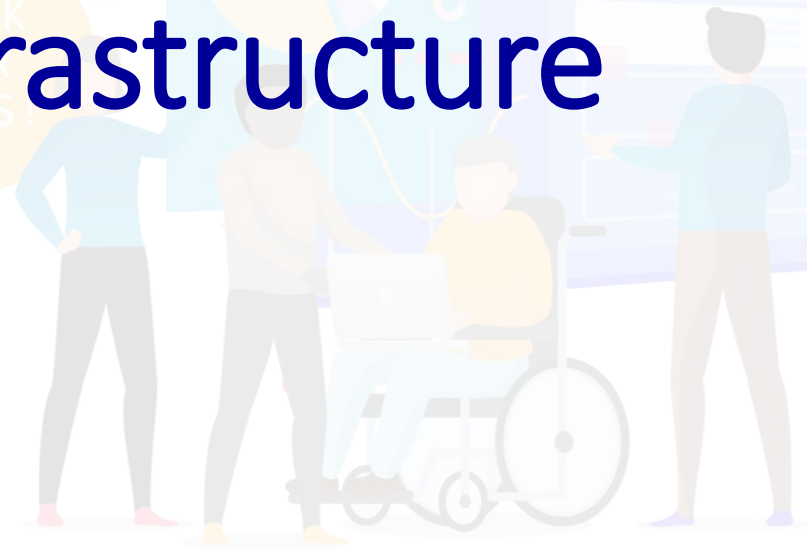


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AWS Global Infrastructure

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Agenda

- Global Infrastructure Components
- Determining the right Region
- Multi-Region and Multi-AZ





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AWS Global Infrastructure

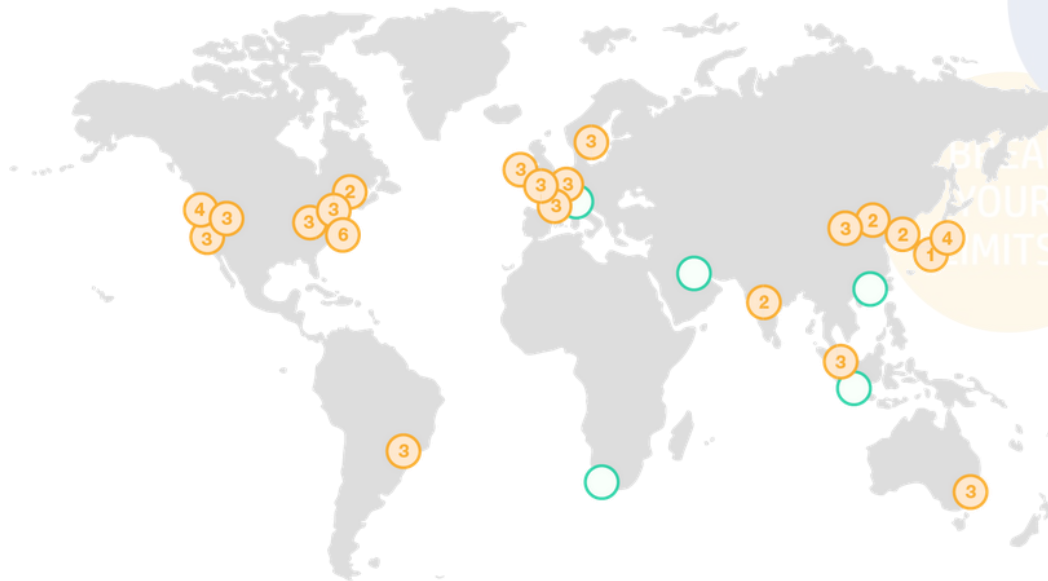
- In order to serves users all around the world, AWS services has to be built on top of massive, reliable and robust set of infrastructures that are spanned all across the globe.
- These infrastructures are **AWS Global Infrastructure**
- The AWS Global Cloud Infrastructure is the most secure, extensive, and reliable cloud platform, offering over 200 fully featured services from data centers globally.
- Whether you need to deploy your application workloads across the globe in a single click, or you want to build and deploy specific applications closer to your end-users with single-digit millisecond latency, AWS provides you the cloud infrastructure where and when you need it.





AWS Global Infrastructure

24 Regions – 77 Availability Zones – 199+ Edge Locations



Announced Regions

Indonesia, Spain, Japan

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Region & Number of Availability Zones

US East

N. Virginia (6), Ohio (3)

China

Beijing (2), Ningxia (3)

US West

N. California (3), Oregon (4)

Europe

Frankfurt (3), Ireland (3), London (3), Paris (3), Stockholm (3)

Asia Pacific

Mumbai (2), Seoul (2), Singapore (3), Hong Kong (3), Sydney (3), Tokyo (4), Osaka-Local (1)¹

South America

São Paulo (3)

Canada

Central (2)

AWS GovCloud

US-East (3), US-West (3)





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Components

- Location that we can put our resources / workloads in AWS Global Infrastructure can be basically divided into two locations :
 - AWS Availability Zone (AZ)
 - AWS Region

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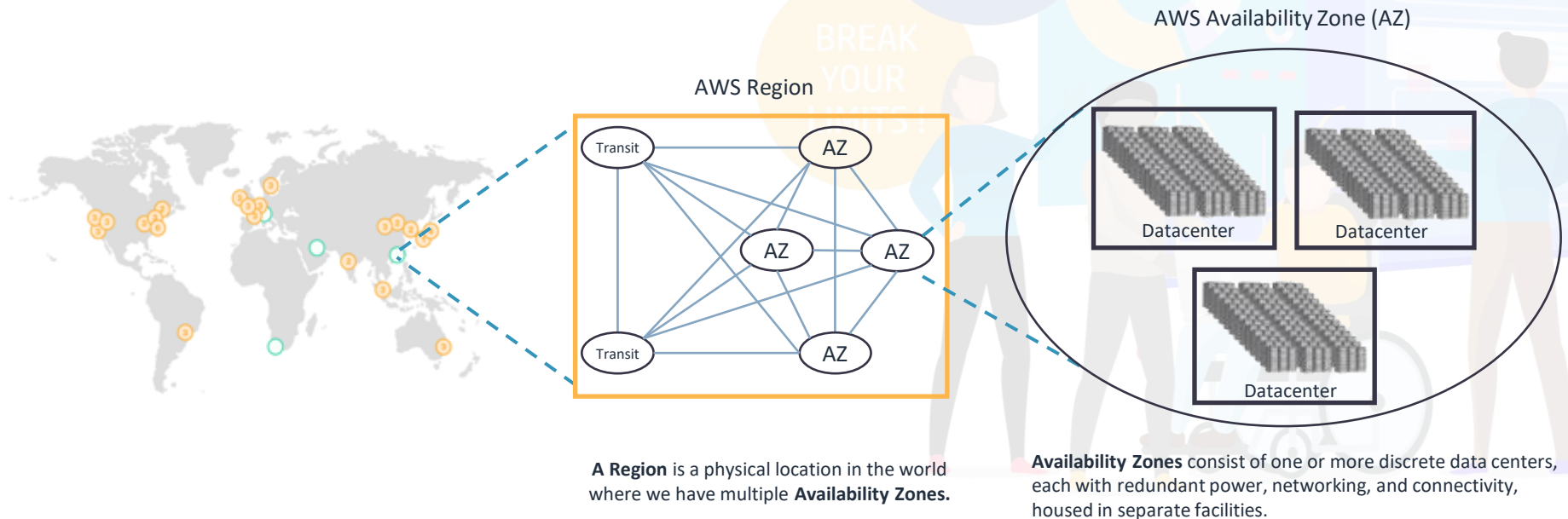




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AWS Region Design

- AWS Regions are comprised of multiple AZs for high availability, high scalability, and high fault tolerance. Applications and data are replicated in real time and consistent in the different AZs





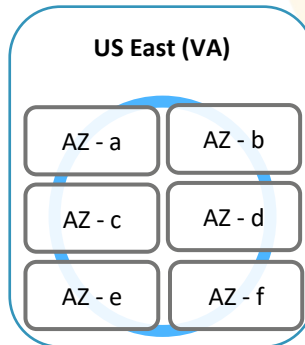
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AWS Global Infrastructure Regions

- At least 2 Availability Zones per region
- Examples:

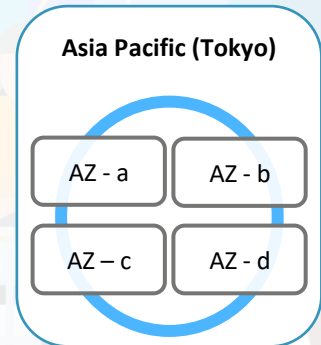
US East (N. Virginia)

us-east-1a
us-east-1b
us-east-1c
us-east-1d
us-east-1e
us-east-1f



Asia Pacific (Tokyo)

ap-northeast-1a
ap-northeast-1b
ap-northeast-1c
ap-northeast-1d



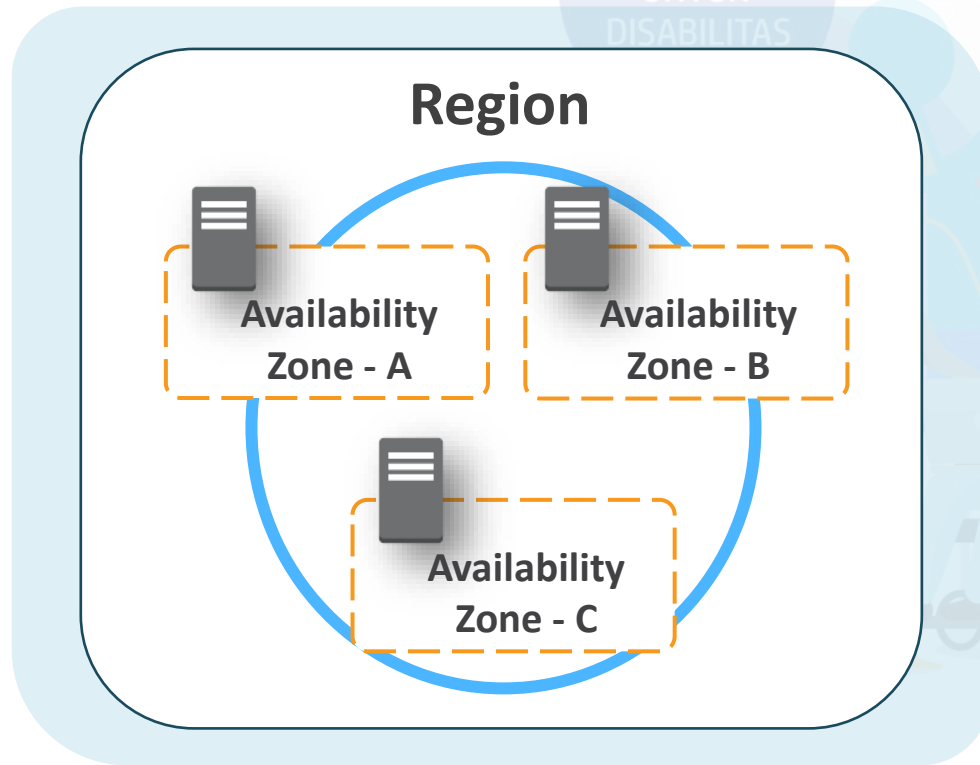
Note: Conceptual drawing only. The number of Availability Zones (AZ) may vary.





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High Availability Using Multi-AZ Deployments





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Determining the Right Region



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Best Practice for Choosing Region

- In general, try to follow these best practices when you choose a region, to help ensure top performance and resilience:
 - Proximity
 - Services
 - Cost
 - Service Level Agreement (SLA)
 - Compliance





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Choosing Region in AWS Management Console

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https://ap-southeast-1.console.aws.amazon.com/console/home?region=ap-southeast-1

Services ▾ Resource Groups ▾

TrainocateIndonesia ▾ Singapore ▴

AWS Management Console

AWS services

Find Services

You can enter names, keywords or acronyms.

Example: Relational Database Service, database, RDS

Recently visited services

Artifact CloudWatch VPC

Stay
resc

Exp

- US East (N. Virginia) us-east-1
- US East (Ohio) us-east-2
- US West (N. California) us-west-1
- US West (Oregon) us-west-2
- Africa (Cape Town) af-south-1
- Asia Pacific (Hong Kong) ap-east-1
- Asia Pacific (Mumbai) ap-south-1
- Asia Pacific (Seoul) ap-northeast-2
- Asia Pacific (Singapore) ap-southeast-1**
- Asia Pacific (Sydney) ap-southeast-2
- Asia Pacific (Tokyo) ap-northeast-1



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Regional / Zonal Services

- AWS have wide range of services that we can put in regional scope, zonal scope, multi-regional, dual-region, or global.
- For example, when we create EC2 instance, we have to choose which **zone** we want to run this EC2 on, because EC2 is **zonal** resource

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aws Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of lower prices.

Number of instances 1 [Launch into Auto Scaling Group](#)

Purchasing option ☐ Request Spot instances

Network vpc-1fe1b178 (default) [Create new VPC](#)

Subnet No preference (default subnet in any Availability Zone) [Create new subnet](#)

Auto-assign Public IP subnet-4446770d | Default in ap-southeast-1a
subnet-887f83d1 | Default in ap-southeast-1c

Placement group ☐ Add instance to placement group

Capacity Reservation Open





Multi-Region and Multi-AZ

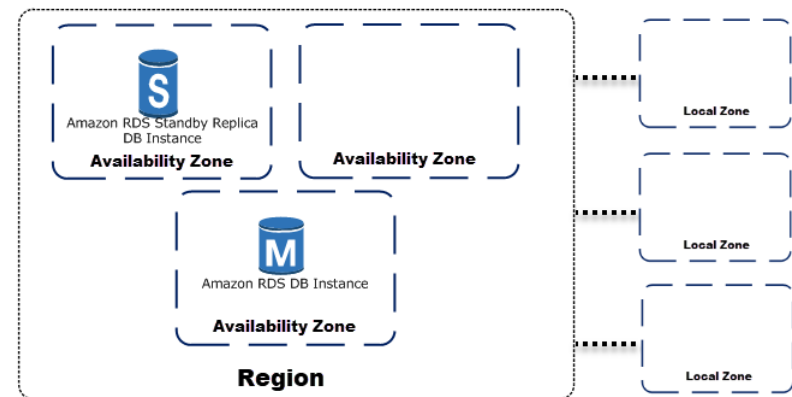




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Multi-AZ

- AWS support multiple AZ placement of specific services to better increase their availability, for example we can utilize RDS multi-AZ replication of standby replica
- In this fashion, we can still withstand single AZ failure, since we still have replica in another AZ, thus increasing its availability





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Multi-Region

- To even better increase the availability of your workload, we can put your workload in multiple regions.
- For example, with Amazon S3 Cross-Region Replication, we can replicate objects in our S3 bucket from one region to another region





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Key Point

- AWS Global Infrastructure : Regions, AZ and Edges
- How to select regions
- AWS Multi Region and Multi AZ deployment





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(Gd. Belakang Lt. 4 - 5)
Jakarta Pusat, 10110

