

EC2 - Solutions Architect Associate Level

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1 Private vs Public vs Elastic IP

- Public IP - accessible over the public Internet, can be identified on the internet, must be unique
- Private IP - only accessible within your private network, must be unique in that private network
- IPs in private network connect to internet via NAT and internet gateway (proxy)
- Elastic IP - when you stop and start an ec2 instance it changes its IP
- Can mask the failure of an instance or software by rapidly remapping the address to another instance in your acct
- Avoid elastic IP - use random public IP and register DNS name to it, or use a ELB and no public IP

2 EC2 Placement Groups

- If you want control over the EC2 Instance placement strategy
- When creating a placement group, you specify one of the following strategies for the group:
 - Cluster: clusters instances into a low latency group in a single AZ. Use case: Big data job that needs to complete fast.
 - Spread: spreads instances across underlying hardware (critical applications). Minimized risk, maximize high availability.
 - Partition: spreads instances across many different partitions within an AZ. Scale to 100s of EC2 instances per group (Hadoop, Cassandra, Kafka).

3 Elastic Network Interface

- Logical component in a VPC that represents a virtual network card
- Provides an EC2 instance with network connectivity
- They have:
 - Primary private IPv4 and one or more secondary IPv4
 - One elastic IP
 - One public IP
 - one or more SGs
 - MAC address
- Can create an ENI independently and attach them on the fly or move them for failover

4 EC2 Hibernate

- Stop instance: data on disk (EBS) is kept intact in the next start
- Terminate: any EBS volumes (root) also set-up to be destroyed is lost
- On start the following happens:
 - First start: the OS boots and EC2 user data script is run
 - Following starts: the OS boots up
 - Application starts, caches get warmed up, and that can take time
- Hibernate:
 - in-memory RAM is preserved
 - instance boot is much faster
 - RAM state is written to a file in the root EBS volume
 - that EBS volume must be encrypted

5 Advanced Concepts

5.1 EC2 Nitro

- Underlying platform for next generation of EC2 instances
- New Virtualization technology - better performance like networking, **higher speed EBS**
- Better security

5.2 vCPU

- core = CPU
- Multiple threads can run on one CPU
- Each thread is represented as a virtual CPU
- m5.2xlarge. 4 CPU, 2 threads per CPU = 8 vCPU

5.3 Capacity Reservations

- Ensure you have EC2 capacity when needed
- Capacity access is immediate, planned end-date for reservation