**S3**

* Simple Storage Service
* We have 2 types of storage in ec2 whereas one is block and other is object.
* EBS comes under block type storage where we install os and s3 comes under object.
* Here we can't install os but we can keep n number of objects just like google drive.
* In s3 the outer part we call as bucket and the inside we call as objects. We can also put folders inside bucket and inside folder we can keep objects.
* Simple web service interface to store and retrieve any amount of data from anywhere on the web.
* Here bucket is unlimited. We can keep any amount of data but each file size should be 0 to 5TB if we upload through graphical/console.
* As we know we can also access aws using CLI, so if we are uploading through command line here file size should be 0 to 5GB.
* Whatever the names we are giving for s3 should be unique globally.
* Once we upload any file into s3 bucket, we can access it immediately. That is the reason it is said 99.99% availability for s3 platform and also amazon guarantee 99.99999% durability that means we never lost the data.
* Tiered storage is available which means in aws we have different types of storage classes. For example, we have different categories in Indian railway like (one tier, two tier, three tier) and we choose the type based on affordability and requirement. Similarly, we will choose type of storage based on requirement. If data is very critical and important and also ready to pay any amount, then we will go with the type which is costly so that we can get 99.99% availability and 99.999999% durability. If we want to upload any movies then 99.999% durability is not necessary so we go for type which is somewhat cheaper. Here we can access the data not immediately but after some time. And similarly, we have different types of storage classes and we use it based on our requirement and type of data but if we are going with cheaper, we will not get that much durability and also access it after some time but not immediately.
* Life cycle management.
* Versioning. Two advantages of versioning. 1. by mistake if we delete any object, we can recover it. 2. Every time we upload the file, that will be stores as a new version. i.e., after uploading a file if we change any line or add any line that will be stores as a new version.
* Encryption. two types of encryptions. 1.standard which means once we upload any data into s3 bucket that will be encrypted for safety. That is standard. 2. KMS key management service. First, they encrypt with standard encryption. Then they get both encryption and decryption keys. Then again, they get one more set of keys which contains encryption and decryption keys. This will keep on rotating for better security. Mostly we use in banks.
* Once we create a bucket by default it will be private means only we can access it. So, to make it public we have 2 types of ways. Access control lists and bucket policy.
* Access control list can be applied for both bucket level and object level but bucket policy is applied only for bucket level.
* If we want to apply acl for bucket and objects then we need to apply acl for both bucket as well as objects. Suppose if we apply acl for bucket then bucket only will be public but not objects.
* Bucket policy if we apply for bucket then it will get applied for both bucket and objects. That is the reason we can't apply bucket policy for objects separately.
* As discussed above different types of storage classes are S3 Standard, S3 Intelligent Tiering, S3 Standard IA, S3 One Zone-IA (Infrequently Access), S3 Glacier (To get data, need to wait or 2-5 hours), S3 Glacier Deep Archive (To get data, need to wait for 12 hours).
* In availability zones we can launch instances but in edge location we can only share and upload the data.
* When we use transfer acceleration, it can automatically find out nearest edge location so that we can upload it there.