**1. What is Amazon Elastic File System?**

**Answer**: Amazon Elastic File System (Amazon EFS) is a simple, serverless, set-and-forget elastic file system that makes it easy to set up, scale, and cost-optimize file storage in AWS. With a few clicks in the AWS Management Console, you can create file systems that are accessible to Amazon Elastic Compute Cloud (EC2) instances, Amazon container services (Amazon Elastic Container Service [ECS], Amazon Elastic Kubernetes Service [EKS], and AWS Fargate), and AWS Lambda functions through a file system interface (using standard operating system file I/O APIs). They also support full file system access semantics, such as strong consistency and file locking.

Amazon EFS file systems can automatically scale from gigabytes to petabytes of data without needing to provision storage. Tens, hundreds, or even thousands of compute instances can access an Amazon EFS file system at the same time, and Amazon EFS provides consistent performance to each compute instance. Amazon EFS is designed to be highly durable and highly available. With Amazon EFS, there is no minimum fee or setup costs, and you pay only for what you use.

**2. What is the difference between S3 and EFS?**

**Answer**: EFS is file storage whereas S3 is object storage.

EFS is filesystem presented over IP network as normal OS drive, while S3 is HTTP accessed store.

EFS is capable of being mounted whereas S3 doesn't.

S3 has capabilities beyond just filesystem, there is whole metadata part where you can store info about your objects in S3.

As S3 is accessed over http, it's capable of hosting a static web site on its own whereas EFS needs a computing and frontend service to have such capability.

**3. Difference between EFS and EBS?**

**Answe**r:

**Comparison based on Characteristics:**

**Storage Type**

EBS (Elastic block storage) & EFS (Elastic file system), as the name suggests EBS is block-level storage and EFS is file-level storage.

**Availability**

As we know that EBS is directly attached to the instance so there is no sign of the term availability in it whereas Amazon EFS is highly durable and highly available storage.

**Durability**

EBS is similar to hard disks but the only difference is that EBS is connected to virtual EC2 instances and it offers 20 times more reliability than normal hard disks.

EFS is highly durable storage.

**Performance**

EBS offers a Baseline performance of 3 IOPS per GB for General Purpose volume and also we can use Provisioned IOPS for increased performance whereas EFS supports up to 7000 file system operations per second.

**Data Stored**

The data stored in EBS remains in the same availability zone and multiple replicas are created within the same availability zone whereas in EFS the data stored remains in the same region and multiple replicas are created within the same region.

**Comprehensive managed service**

EFS is a completely managed service, which means that your firm will never have to patch, deploy, or maintain your file system, but the same is not the case with EBS.

**Data Access**

One most important disadvantage of EBS is that it cannot be accessed directly via the internet, it can only be accessed by a single EC2 instance with whom it is connected, whereas EFS storage allows access of 1 to 1000s of EC2 instances concurrently via the internet but these instances must be present in the same region only.

**Encryption**

Both EBS and EFS supports encryption and uses an AWS KMS–Managed Customer Master Key (CMK) and AES 256-bit Encryption standards for encryption.

**File Size Limitation**

As EBS is directly connected to the EC2 instance so we have don’t have any limitation on file size whereas in EFS the maximum size of a single file can be up to 47.9TiB.

**Cost savings**

EFS is the only storage in which you’ll pay for is exactly what you use, as there’s no advance provisioning, up-front fees, or commitments whereas in EBS you need to attach a fixed amount of volume, and you are charged for the same.

**4. Difference between S3 and EFS?**

**Answer**: S3 is object based whereas EFS is block based.

**5. When should I use Amazon EFS vs. Amazon EBS vs. Amazon S3?**

**Answer**: AWS offers cloud storage services to support a wide range of storage workloads.

Amazon EFS is a file storage service for use with Amazon compute (EC2, containers, serverless) and on-premises servers. EFS provides a file system interface, file system access semantics (such as strong consistency and file locking), and concurrently accessible storage for up to thousands of EC2 instances.

Amazon Elastic Block Store (EBS) is a block-level storage service for use with EC2. Amazon EBS can deliver performance for workloads that require the lowest-latency access to data from a single EC2 instance.

Amazon Simple Storage Service (S3) is an object storage service. Amazon S3 makes data available through an internet API that can be accessed anywhere.

**6. How do I access a file system from an Amazon EC2 instance?**

**Answer**: To access your file system, mount the file system on an Amazon EC2 Linux-based instance using the standard Linux mount command and the file system’s DNS name. To simplify accessing your Amazon EFS file systems, we recommend using the Amazon EFS mount helper utility. Once mounted, you can work with the files and directories in your file system just like you would with a local file system.

**7. How do I manage a file system?**

**Answer**: Amazon EFS is a fully managed service, so all of the file storage infrastructure is managed for you. When you use Amazon EFS, you avoid the complexity of deploying and maintaining complex file system infrastructure. An Amazon EFS file system grows and shrinks automatically as you add and remove files, so you don’t need to manage storage procurement or provisioning.

You can administer a file system through the AWS Management Console, the AWS CLI, or the Amazon EFS API (and various language-specific SDKs). The console, API, and SDK provide the ability to create and delete file systems, configure how file systems are accessed, create and edit file system tags, enable features such as Provisioned Throughput and Lifecycle Management, and display detailed information about file systems.

**8. How do I load data into a file system?**

**Answer**: AWS DataSync provides a fast and simple way to securely sync existing file systems with Amazon EFS. DataSync works over any network connection, including with AWS Direct Connect or AWS VPN. AWS Direct Connect provides a high-bandwidth and lower-latency dedicated network connection, over which you can mount your Amazon EFS file systems. You can use AWS DataSync to copy files between two Amazon EFS file systems, including those in different AWS Regions and those belonging to different AWS accounts. You can also use standard Linux copy tools to move data files to Amazon EFS.

**9. How do I move files to EFS Standard-IA and EFS One Zone-IA?**

**Answer**: Moving files to EFS Standard-IA and EFS One Zone-IA starts by enabling Amazon EFS Lifecycle Management and choosing an age-off policy for your files. Lifecycle Management automatically moves your data from the EFS Standard to the EFS Standard-IA storage class or from the EFS One Zone to the EFS One Zone-IA storage class according to the lifecycle policy you choose. For example, you can automatically move files from EFS Standard to EFS Standard-IA if they aren’t accessed after seven days.

**10. What happens when I disable the policy to move files to the IA storage classes using Amazon EFS Lifecycle Management?**

**Answer**: When you disable the policy to move files to the IA storage classes, files will no longer be moved to either EFS Standard-IA or EFS One Zone-IA storage classes (depending on whether your file systems use Standard or One Zone storage classes), and any files that have already moved to an IA storage class will remain there.

**11. When should I use Lifecycle Management to move files to the IA storage classes without a policy to move files back to EFS Standard or EFS One Zone, if accessed?**

**Answer**: Use EFS Lifecycle Management to automatically move files to EFS Standard-IA or EFS One Zone-IA if your file system contains files that you’re certain will be accessed infrequently or not at all. Enable Lifecycle Management by choosing a policy to move files to EFS Standard-IA or EFS One Zone-IA, depending on whether your file system uses EFS Standard or EFS One Zone storage classes. Both EFS Standard-IA and EFS One Zone-IA storage classes are ideal if you need your full dataset readily accessible, and you want to automatically save on storage costs as your files are accessed less frequently. Examples include satisfying audits, performing historical analysis, or backup and recovery.

**12. When should I use EFS Intelligent-Tiering?**

**Answer**: Use EFS Intelligent-Tiering to automatically move files between performance-optimized and cost-optimized storage classes when data access patterns are unknown. Enable EFS Lifecycle Management by choosing a policy to automatically move files to EFS Standard-IA or EFS One Zone-IA. Additionally, choose a policy to automatically move files back to EFS Standard or EFS One Zone when they’re accessed. With EFS Intelligent-Tiering, you can save on storage costs even if your application access patterns are unknown or access patterns change over time. With these two Lifecycle Management policies set, you pay only for data transition charges between storage classes, and not for repeated data access. Examples of workloads that may have unknown access patterns include web assets and blogs stored by content management systems, logs, machine learning (ML) inference files, and genomic data.

**13. What happens when I disable EFS Intelligent-Tiering?**

**Answer**: When you disable both Lifecycle Management policies, files will no longer move between the performance-optimized and IA storage classes, and files will remain in the storage classes they resided in when you disabled the lifecycle policies. To disable EFS Intelligent-Tiering, you must disable both the policy that moves files to the EFS Standard-IA or EFS One Zone-IA storage classes, and the policy that moves files to the EFS Standard or EFS One Zone storage class on first access.

**14. What is the latency difference between the performance-optimized storage classes (EFS Standard, EFS One Zone) and the cost-optimized IA storage classes (EFS Standard-IA, EFS One Zone-IA)?**

**Answer**: When reading from or writing to the EFS Standard-IA storage class or EFS One Zone-IA storage class, your first-byte latency is higher than that of the EFS Standard or EFS One Zone storage classes. The EFS Standard and EFS One Zone storage classes are designed to provide sub-millisecond read latencies and single-digit millisecond write latencies on average. The EFS Standard-IA and EFS One Zone-IA storage classes are designed to provide double-digit millisecond latencies on average.

**15. Why should I use Amazon EFS Access Points?**

**Answer**: Amazon EFS Access Points represent a flexible way to manage application access in NFS environments with increased scalability, security, and ease of use. Use cases that can benefit from Amazon EFS Access Points include container-based environments where developers build and deploy their own containers, data science applications that require access to production data, and sharing a specific directory in your file system with other AWS accounts.

**16. How do Amazon EFS Access Points work?**

**Answer**: When you create an Amazon EFS Access Point, you can configure an operating system user and group, and a root directory for all connections that use it. If you specify the root directory’s owner, EFS will automatically create it with the permissions you provide the first time a client connects to the access point. You can also update your file system’s IAM policy to apply to your access points. For example, you can apply a policy that requires a specific IAM identity in order to connect to a given access point. For more information, see the Amazon EFS user guide.