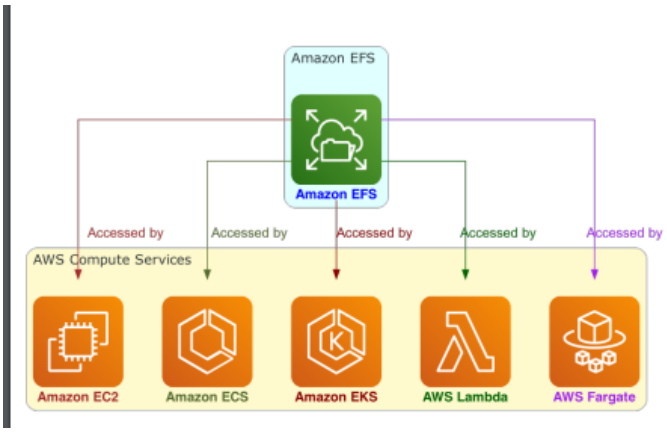
Amazon Elastic File System

Table of Contents

1. **What is Amazon Elastic File System?**
2. **Amazon EFS File System Types**
3. **EFS Storage Classes**
4. **EFS Performance Modes**
5. **EFS Throughput Modes**
6. **Choosing the Correct EFS Throughput Mode**
7. **How Amazon EFS Works**
8. **How Amazon EFS Works with Amazon EC2**
9. **Amazon EFS One Zone File Systems**
10. **How Amazon EFS Works with AWS Direct Connect and AWS Managed VPN**

1. What is Amazon Elastic File System?

Amazon Elastic File System (Amazon EFS) is a fully managed, scalable, and elastic file storage system designed for use with AWS cloud services and on-premises resources. It provides a simple, serverless, and set-and-forget file storage system that automatically grows and shrinks as files are added and removed.



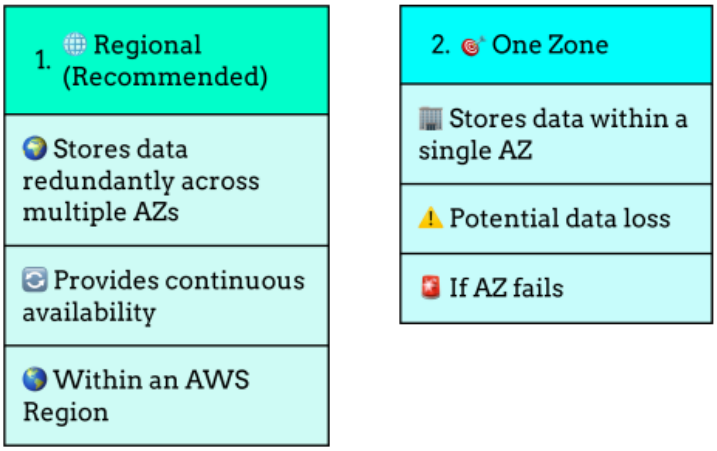
Key Benefits:

- **Scalability: Automatically scales up and down as per storage needs.**
- **Performance: Provides consistent, low-latency performance for file-based workloads.**
- **Durability and Availability: Offers high availability across multiple AWS Availability Zones.**
- **Integration: Works seamlessly with Amazon EC2, AWS Lambda, and other AWS services.**

2. Amazon EFS File System Types

Amazon EFS provides two file system types:

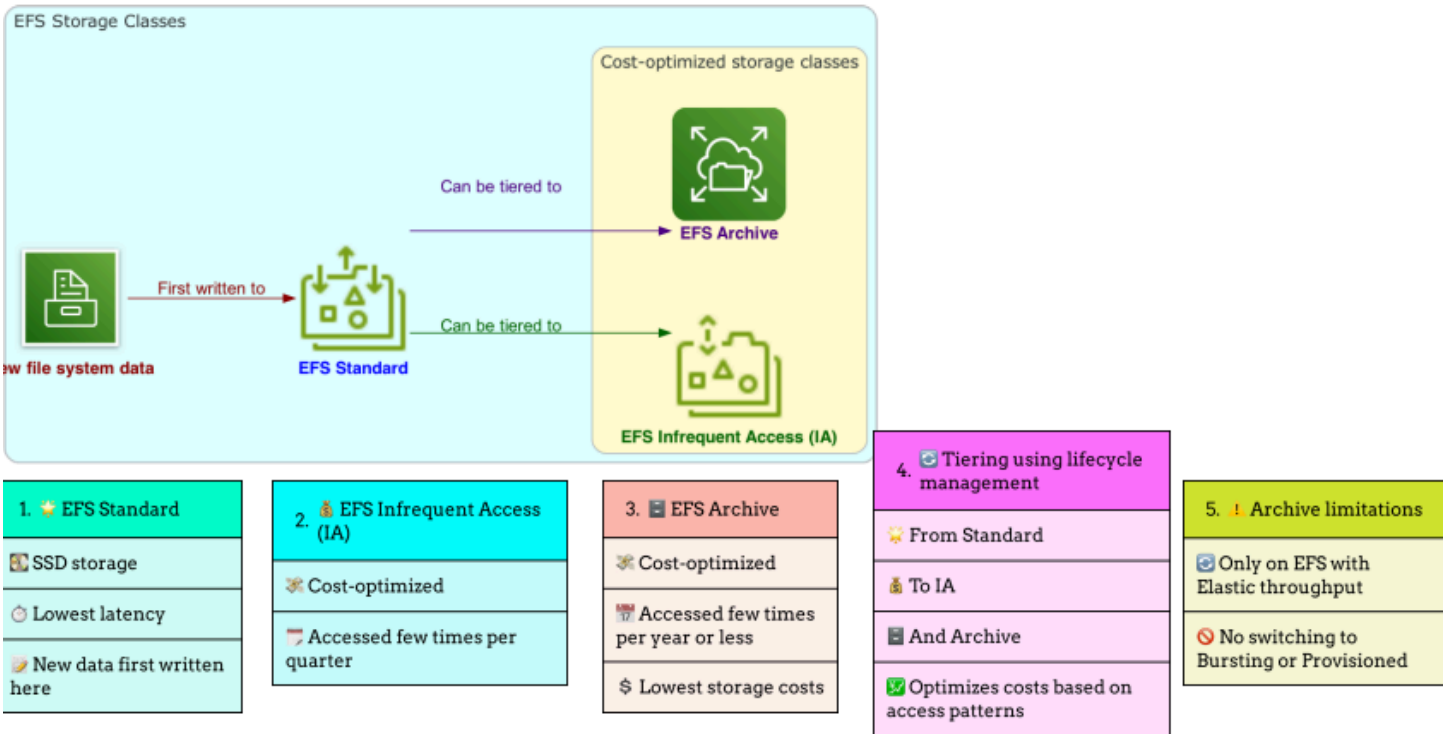
- **Standard File System: Designed for general-purpose workloads requiring high durability and availability.**
- **One Zone File System: Stores data in a single AWS Availability Zone, offering lower latency and reduced cost.**



3. EFS Storage Classes

Amazon EFS offers two storage classes to optimize cost and performance:

- **Standard Storage Class: Used for frequently accessed files.**
- **Infrequent Access (IA) Storage Class: Optimized for files that are accessed less frequently, reducing storage costs.**



How Amazon EFS Works

Amazon EFS is a fully managed, serverless file storage system that dynamically scales based on demand. It provides a simple, elastic, and scalable file system accessible from multiple EC2 instances simultaneously.

Key Features:

- **Automatic Scaling: EFS automatically grows and shrinks as files are added or removed.**
- **High Availability and Durability: Replicates data across multiple Availability Zones (AZs) for fault tolerance.**
- **Shared Access: Multiple EC2 instances, Lambda functions, and containers can concurrently access the file system.**
- **Low Latency: Provides low-latency file operations, making it ideal for big data, analytics, and content management systems.**
- **Security and Compliance: Supports encryption at rest and in transit, VPC integration, and AWS IAM-based access control.**

EFS Lifecycle Management:

Amazon EFS supports lifecycle management policies that automatically transition infrequently accessed files to a lower-cost storage tier. This helps optimize costs while ensuring data availability.

Integration with AWS Services:

- **Amazon EC2: Provides persistent shared storage for EC2 instances.**
- **AWS Lambda: Enables serverless applications to access and process files stored in EFS.**
- **Amazon ECS & EKS: Allows containerized applications to use persistent storage.**
- **AWS Direct Connect & VPN: Enables hybrid cloud setups with on-premises integration.**

Amazon EFS is a powerful, scalable, and fully managed file storage solution that integrates seamlessly with AWS services. It provides high availability, elasticity, and flexibility, making it an excellent choice for various workloads, from web hosting to data analytics and hybrid cloud storage.