

AWS Elastic File System (EFS)

Documentation

1. Introduction

Amazon Elastic File System (EFS) is a scalable, fully managed, cloud-native file storage service provided by AWS. It is designed to be used with Amazon EC2 instances and offers simple, serverless file storage that can grow and shrink automatically as files are added and removed.

2. Key Features

- Elastic Storage: Automatically scales as you add or remove files without provisioning.
- Shared Access: Multiple EC2 instances can access the same file system at the same time.
- Fully Managed: AWS handles all the complexity of managing the underlying infrastructure.
- Highly Available and Durable: Data is stored redundantly across multiple Availability Zones.
- Secure: Supports encryption at rest and in transit, and integrates with IAM for access control.

3. Use Cases

- Content management systems (e.g., WordPress on multiple servers)
- Web hosting
- Big data analytics
- Shared development environments
- Container storage with Amazon ECS and EKS

4. EFS vs EBS vs S3

Feature	EFS	EBS	S3
Storage Type	File Storage (NFS)	Block Storage	Object Storage
Shared Access	Yes	No	Yes
Access	Multiple EC2 instances	Single EC2 instance	Web apps, APIs

Ideal Use Case | Shared files across instances| OS and application data | Backups, media, logs

5. How to Create and Use EFS

Step 1: Create EFS File System

1. Open the AWS Management Console.
2. Go to the EFS service.
3. Click on "Create file system".
4. Provide a name and select the VPC.
5. Add mount targets (Availability Zones subnets).
6. Configure security groups and click "Create".

Step 2: Mount EFS to EC2 Instance

1. SSH into your EC2 instance.
2. Install the NFS client:
3. Create a mount directory:
4. Mount EFS:

6. Security and Access Management

- Use IAM policies and roles to manage permissions.
- Control EC2 access via security groups and network ACLs.
- Enable encryption at rest and in transit for data protection.

7. Performance and Storage Classes

- Standard: Ideal for high throughput and frequent access.
- Infrequent Access (IA): Cost-effective for data used less often.
- Enable Lifecycle Management to automate file class transitions.

8. Pricing Overview

- Billed per GB of used storage monthly.
- Different rates for Standard and IA classes.

- Additional charges may apply for provisioned throughput.

9. Conclusion

AWS EFS is a reliable, scalable, and secure file storage solution for cloud workloads. Its support for concurrent access by multiple EC2 instances makes it perfect for modern, distributed applications.