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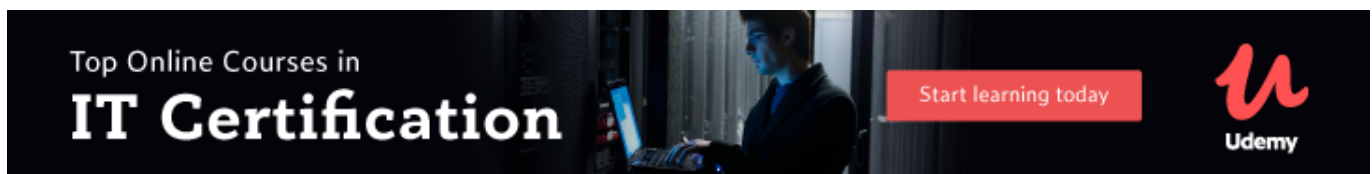
# Amazon S3 vs Amazon EBS vs Amazon EFS

 Tutorials Dojo	S3	EBS	EFS
Type of storage	Object storage. You can store virtually any kind of data in any format.	Persistent block level storage for EC2 instances.	POSIX-compliant file storage for EC2 instances
Features	Accessible to anyone or any service with the right permissions	Deliver performance for workloads that require the lowest-latency access to data from a single EC2 instance	Has a file system interface, file system access semantics (such as strong consistency and file locking), and concurrently-accessible storage for multiple EC2 instances
Max Storage Size	Virtually unlimited	16 TiB for one volume	Unlimited system size
Max File Size	Individual Amazon S3 objects can range in size	Equivalent to the maximum size of your	47.9 TiB for a single file

	to a maximum of 5 terabytes.	volumes	
Performance (Latency)	Low, for mixed request types, and integration with CloudFront	Lowest, consistent; SSD-backed storages include the highest performance Provisioned IOPS SSD and General Purpose SSD that balance price and performance.	Low, consistent; use Max I/O mode for higher performance
Performance (Throughput)	Multiple GBs per second; supports multi-part upload	Up to 2 GB per second. HDD-backed volumes include Throughput Optimized HDD for frequently accessed, throughput intensive workloads and Cold HDD for less frequently accessed data.	10+ GB per second. Bursting Throughput mode scales with the size of the file system. Provisioned Throughput mode offers higher dedicated throughput than bursting throughput.
Durability	Stored redundantly across multiple AZs; has 99.999999999% durability	Stored redundantly in a single AZ	Stored redundantly across multiple AZs
Availability	S3 Standard - 99.99% availability S3 Standard-IA - 99.9% availability S3 One Zone-IA - 99.5% availability.	Has 99.999% availability	No SLA. Runs in multi-AZ
Scalability	Highly scalable	Manually increase/decrease your memory size. Attach and detach additional volumes to and from your EC2 instance to scale.	EFS file systems are elastic, and automatically grow and shrink as you add and remove files.
Data Accessing	One to millions of connections over the web; S3 provides a REST web services interface	Single EC2 instance in a single AZ	One to thousands of EC2 instances or on-premises servers, from multiple AZs, regions, VPCs, and accounts concurrently
Access Control	Uses bucket policies and IAM user policies. Has <i>Block Public Access</i> settings to help manage public access to resources.	IAM Policies, Roles, and Security Groups	Only resources that can access endpoints in your VPC, called a <i>mount target</i> , can access your file system; POSIX-compliant user and group-level permissions
Encryption Methods	Supports SSL endpoints using the HTTPS protocol,	Encrypts both data-at-rest and data-in-transit	Encrypt data at rest and in transit. Data at rest

	Client-Side and Server-Side Encryption (SSE-S3, SSE-C, SSE-KMS)	through EBS encryption that uses AWS KMS CMKs.	encryption uses AWS KMS. Data in-transit uses TLS 1.2.
Backup and Restoration	Use versioning or cross-region replication	All EBS volume types offer durable snapshot capabilities.	EFS to EFS replication through third party tools or AWS DataSync
Pricing	Billing prices are based on the location of your bucket. Lower costs equals lower prices. You get cheaper prices the more you use S3 storage.	You pay GB-month of provisioned storage, provisioned IOPS-month, GB-month of snapshot data stored in S3	You pay for the amount of file system storage used per month. When using the Provisioned Throughput mode you pay for the throughput you provision per month.
Use Cases	Web serving and content management, media and entertainment, backups, big data analytics, data lake	Boot volumes, transactional and NoSQL databases, data warehousing & ETL	Web serving and content management, enterprise applications, media and entertainment, home directories, database backups, developer tools, container storage, big data analytics
Service endpoint	Can be accessed within and outside a VPC (via S3 bucket URL)	Accessed within one's VPC	Accessed within one's VPC

### Additional notes



- S3 is cheaper than EBS and EFS in pure storage costs
- EBS and EFS has higher performance than S3
- EBS is meant to be used as volumes for EC2 instances
- S3 does not have a hierarchy (flat environment) for files unlike EFS
- S3 has a built-in query feature
- S3 offers eventual consistency for overwrite PUTS and DELETES in all regions.

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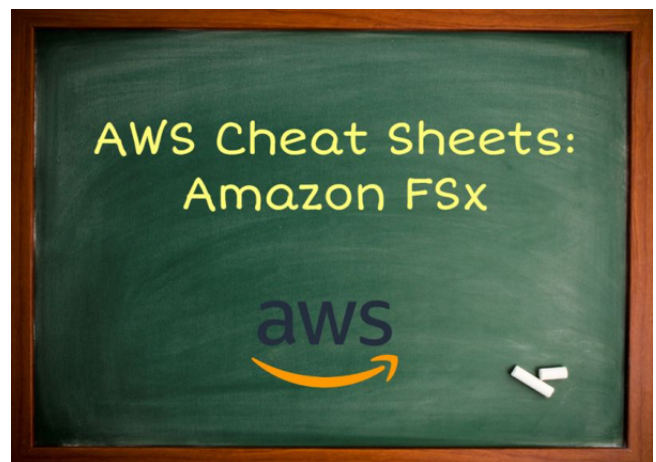
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