



Amazon S3 Use Case

Client Project: Enhancing Media Streaming Reliability with Amazon S3

GENERAL CHARACTERISTICS

Intent	To build a robust and scalable media streaming solution using Amazon S3 for uninterrupted content delivery.
Scope	Deployment of Amazon S3 as central storage integrated with CloudFront and IAM policies for performance.
Level	System-level.
Client	Confidential (Media Streaming Company).
Last Update	[Today's Date]
Status	Finalized.
Stage	Implementation and Monitoring.

ACTORS

Primary Actor	AWS Solutions Architect.
Secondary Actors	DevOps Engineer, Media Content Manager, Client's Security Team.

PREREQUISITES

Static Preconditions	<ul style="list-style-type: none">- AWS account with necessary permissions.- AWS services enabled: Amazon S3, CloudFront, IAM, S3 Transfer Acceleration, CloudWatch.- Proper IAM roles and security policies configured.
Dynamic Preconditions	<ul style="list-style-type: none">- On-premises video content ready for migration.- Data access patterns analyzed for cost-effective tiering.- CDN integration planned for optimal delivery.



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Assumptions	<ul style="list-style-type: none"> - Seamless AWS integration possible with current infrastructure. - Solution can handle traffic spikes during live events.
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TRIGGERS

Trigger Event	A scalable, reliable streaming solution for live and on-demand global content delivery.
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EXPECTED OUTCOME

Success Postcondition	<ul style="list-style-type: none"> - Improved streaming performance with minimal buffering. - Optimized storage costs using Intelligent-Tiering and Glacier. - Seamless handling of peak traffic with zero downtime.
Failed Postcondition	<ul style="list-style-type: none"> - Streaming issues such as buffering or long load times persist. - Higher operational costs due to inefficient resource utilization.

OPERATIONS AND CONCEPTS

Operations	<ul style="list-style-type: none"> - Migrated video archives to Amazon S3, leveraging Intelligent-Tiering and Glacier storage tiers. - Integrated CloudFront for fast, secure global content delivery. - Enabled cross-region replication to improve latency and availability. - Configured S3 Transfer Acceleration for high-speed uploads during peak events. - Implemented IAM policies for fine-grained content access control. - Used Amazon S3 Storage Lens for ongoing monitoring and optimization. - Conducted performance tests to validate the architecture under heavy loads.
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Concepts	<ul style="list-style-type: none">- Amazon S3: Scalable and durable object storage service for backup, archiving, and big data analytics.- CloudFront: Content delivery network (CDN) for faster delivery of static and dynamic web content globally.- IAM Policies: Define permissions and access control for AWS resources, ensuring secure management of identities.- Cross-Region Replication: Enables automatic, asynchronous copying of S3 objects across different AWS regions for disaster recovery and low-latency access.- S3 Transfer Acceleration: Speeds up uploads to S3 by routing traffic through optimized CloudFront edge locations.- S3 Storage Lens: Provides visibility into S3 usage and activity with analytics to optimize costs and improve security.
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MAIN SUCCESS SCENARIO

Step 1	Migrated existing content to Amazon S3 with optimized storage classes.
Step 2	Configured CloudFront for efficient content delivery globally.
Step 3	Enabled cross-region replication to ensure high availability.
Step 4	Implemented S3 Transfer Acceleration for faster uploads.
Step 5	Set up IAM policies to protect premium content with fine-grained control.
Step 6	Used S3 Storage Lens for monitoring storage metrics and reducing costs.
Step 7	Validated architecture performance through rigorous live event simulations.
Step 8	Delivered a fully optimized, scalable, and reliable streaming solution.