

Project Report: Scalable Static Website with S3 + Cloudflare + GitHub Actions

1. Introduction

This project demonstrates the deployment of a scalable static website using Amazon S3, Cloudflare for DNS and CDN, and GitHub Actions for continuous integration and deployment (CI/CD). The goal was to host a website that is globally accessible, secure, and automatically updated whenever new code is pushed to the GitHub repository.

2. Objectives

- Deploy a static website using AWS S3
- Integrate Cloudflare for DNS management and caching
- Automate deployment using GitHub Actions
- Ensure scalability, high availability, and HTTPS support

3. Tools & Technologies

- **AWS S3**: Storage and hosting service for static website files
- **Cloudflare**: DNS, CDN, and SSL management
- **GitHub Actions**: CI/CD automation tool
- **HTML, CSS**: Website design and frontend development
- **Bash & YAML**: Used for scripting and workflow automation

4. Implementation Steps

1. Created a static HTML/CSS website and stored it in a GitHub repository.
2. Set up an Amazon S3 bucket for static website hosting.
3. Configured bucket policy for public access to objects.
4. Integrated Cloudflare for domain management and HTTPS support.
5. Generated a Cloudflare API token with Zone:Read and Cache Purge permissions.
6. Stored the Cloudflare token and AWS credentials as GitHub secrets.
7. Created a GitHub Actions workflow (`deploy.yml`) to sync files from GitHub to S3 and purge cache.
8. Verified deployments via GitHub Actions workflow runs.

5. Results

The website is successfully deployed on AWS S3 and served globally via Cloudflare CDN with HTTPS enabled. Every code update pushed to GitHub automatically triggers deployment through GitHub Actions. This ensures a smooth and scalable deployment process.

6. Conclusion

This project showcases the integration of cloud services and CI/CD practices to host and deploy a static website. It highlights the importance of automation, scalability, and global availability in modern web deployments. The approach can be extended to larger projects with more complex architectures.