

# Deploying a Secure Static Website on AWS with WAF Protection

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## 1 Introduction

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This document outlines the step-by-step process of deploying a secure static website on AWS using Amazon S3, Route 53, CloudFront, and AWS WAF. Screenshots are included to illustrate each stage of the deployment.

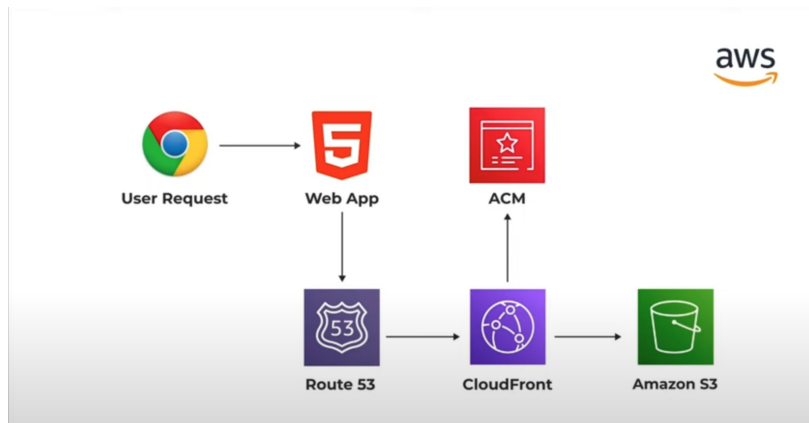


Figure 1: Project skeleton and tools used.

## 2 Setting Up Route 53

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### What is Route 53?

- A scalable DNS and domain name registration service.
- Allows the creation of endpoints for routing user requests to specific applications.

## 3 Enabling CloudFront with HTTPS

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### 3.1 Why CloudFront?

- Enables HTTPS with caching for better security and performance.
- Requires an SSL/TLS certificate from Amazon Certificate Manager (ACM).

### 3.2 Requesting an SSL Certificate

1. Navigate to **Certificate Manager** in AWS.
2. Request a public certificate using DNS validation.
3. Use RSA 2048-bit encryption for security.
4. Once validated, create DNS records in Route 53 by clicking the automated option in ACM.

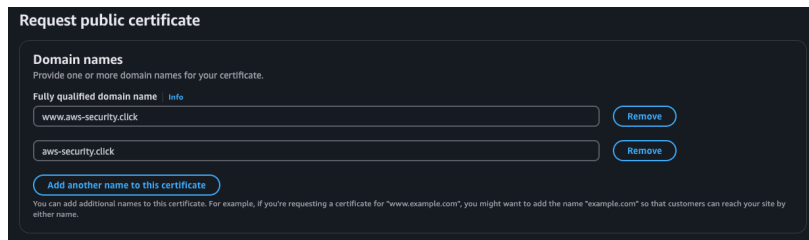


Figure 2: SSL Certificate request process in ACM.

## 4 Configuring CloudFront

1. Navigate to CloudFront and create a new distribution.
2. Set the **Origin Domain** by copying the "Static Website Hosting" endpoint from S3.
3. Under **Viewer Protocol Policy**, select **Redirect HTTP to HTTPS**.
4. In **Custom SSL Certificate**, choose the previously created certificate.
5. Under **Alternative Domain Name (CNAME)**, enter the **www** version of your static site.
6. Enable **AWS WAF** for additional security.

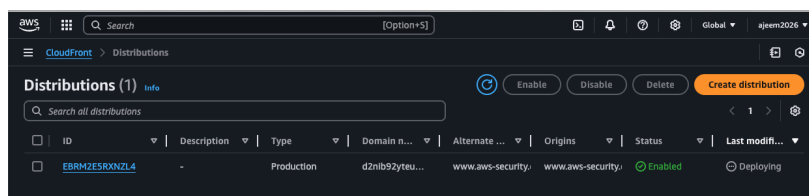
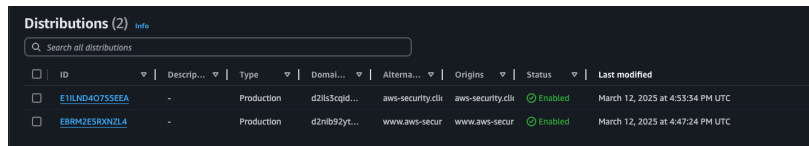


Figure 3: CloudFront distribution setup with HTTPS.

## 5 Creating Non-WWW Distribution

1. Repeat the CloudFront setup process for the non-www version of the website.
2. Now, both www and non-www versions have distributions.



ID	Descrip...	Type	Domai...	Alterna...	Origins	Status	Last modified
EYILND4073SEEA	-	Production	d2ils3cqid...	aws-security.click	aws-security.click	Enabled	March 12, 2025 at 4:53:34 PM UTC
EBRM2ESRXNQL4	-	Production	d2nlb92yt...	www.aws-secur	www.aws-secur	Enabled	March 12, 2025 at 4:47:24 PM UTC

Figure 4: CloudFront distributions for both www and non-www versions.

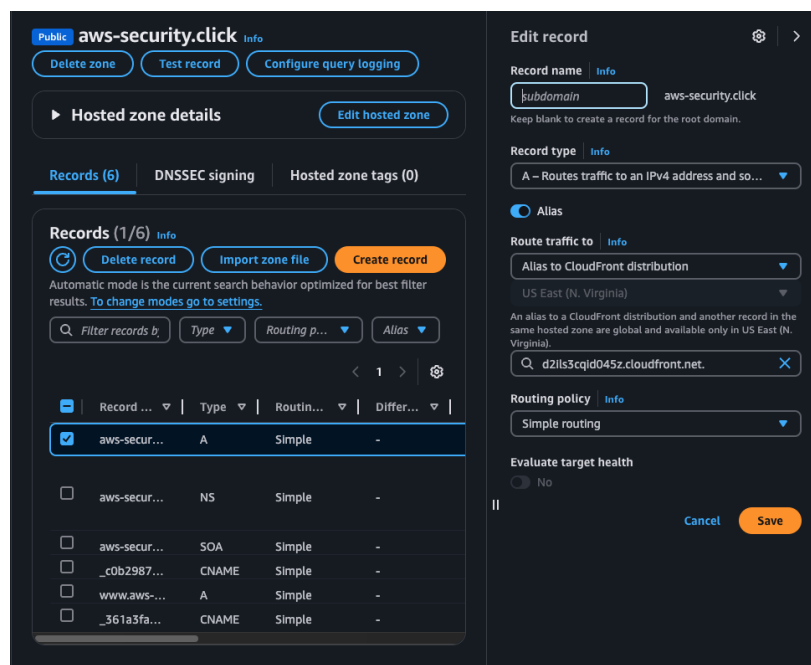
## 6 Final Configurations: Securing with HTTPS and Updating Route 53

### 6.1 Enforcing HTTPS in S3

1. Navigate to S3 and edit the **Static Website Hosting** settings.
2. Change the protocol from HTTP to HTTPS.

### 6.2 Updating Route 53 Records

1. Find the two CNAME records in Route 53.
2. Locate the **A** record and edit it.
3. Change **Route traffic to** from **Alias** to **S3 website endpoint** to **Alias to CloudFront distribution**.
4. Select the correct distribution from the system-suggested options. Repeat this process for other.



Public

aws-security.click

Info

Delete zone Test record Configure query logging

Hosted zone details Edit hosted zone

Records (6) DNSSEC signing Hosted zone tags (0)

Records (1/6) Info

Delete record Import zone file Create record

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

Filter records by Type Routing p... Alias

Record ...	Type	Routin...	Differ...
aws-secur...	A	Simple	-
aws-secur...	NS	Simple	-
aws-secur...	SOA	Simple	-
_cob2987...	CNAME	Simple	-
www.aws-...	A	Simple	-
_361a3fa...	CNAME	Simple	-

Edit record

Record name Info

subdomain aws-security.click

Keep blank to create a record for the root domain.

Record type Info

A - Routes traffic to an IPv4 address and so...

Alias

Route traffic to Info

Alias to CloudFront distribution

US East (N. Virginia)

An alias to a CloudFront distribution and another record in the same hosted zone are global and available only in US East (N. Virginia).

d2ils3cqid045z.cloudfront.net.

Routing policy Info

Simple routing

Evaluate target health

No

Cancel Save

Figure 5: Updating Route 53 records to point to CloudFront.



## 7 Conclusion

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By following these steps, I have successfully deployed a secure static website using AWS S3, Route 53, CloudFront, and AWS WAF. This setup ensures:

- Secure HTTPS access using CloudFront and ACM.
- Optimized routing via Route 53.
- Protection against threats with AWS WAF.

This project showcases my ability to architect, deploy, and secure cloud-based applications, demonstrating my expertise in AWS infrastructure and security.