

Lab 02: Route 53 & HTTPS with CloudFront

Lab Overview

In this lab you will register a domain name in Amazon Route 53 and use it to serve a fully secure static website hosted on S3. By the end, your site will be accessible at both `http://yourdomain.com` and `https://yourdomain.com` with automatic HTTP-to-HTTPS redirection powered by CloudFront.

◆ **PREREQ:** Complete Lab 01 (S3 Static Website Hosting) before starting this lab. You need a working S3 static website as your starting point.

Service	Purpose	Free Tier
Amazon S3	Stores and serves your static website HTML files	Yes
Amazon Route 53	Manages your domain name and DNS records	\$0.50/mo
AWS Certificate Manager	Provides a free SSL/TLS certificate for HTTPS	Always Free
Amazon CloudFront	CDN that delivers your site globally with HTTPS support	Yes

■ **NOTE:** Route 53: \$0.50/month per hosted zone. Domain registration varies by TLD (\$3–\$15/year).

■ **WARNING:** Domain registration is not free and not instantly reversible. You are charged for one year upfront.

Prerequisites

- Completed Lab 01 — you have a working S3 static website
- An active AWS account with billing and a credit/debit card on file
- Budget for domain registration (varies by TLD — .link and .click are ~\$3/year)
- 30–60 minutes available for DNS propagation between steps

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Amazon Route 53 — Domain Registration Register a Domain Name

Route 53 automatically creates a hosted zone for your domain when you register through it.

1. Search for Route 53 in the AWS Console and click it
2. Left sidebar → Registered domains → Register domain
3. Search for your desired domain and select a TLD (.com, .net, .link, or .click)
4. Click Add to cart → Proceed to checkout
5. Fill in registrant contact information and check the agreement checkbox
6. Click Submit

■ **NOTE:** Registration usually completes within 15 minutes. Go to Hosted zones in the left sidebar to confirm — it will have NS and SOA records.

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**Amazon S3
Create a New S3 Bucket Matching Your Domain Name**

X IMPORTANT: Critical: Your S3 bucket name must EXACTLY match your registered domain name. A mismatch will cause routing errors.

1. Navigate to S3 and click Create bucket
2. Bucket name: enter your exact registered domain name
3. Region: us-east-1 — Uncheck Block all public access — check acknowledgment
4. Click Create bucket
5. Open the bucket → Properties → Static website hosting → Edit → Enable
6. Set index document: index.html and error document: error.html → Save changes
7. Under Permissions add the public read bucket policy (same JSON as Lab 01)
8. Upload your index.html and error.html files

✓ **TIP:** Test the site via the S3 endpoint URL. If it loads over HTTP, you are ready for the next steps.

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**AWS Certificate Manager (ACM) — us-east-1 ONLY
Request a Free SSL/TLS Certificate**

X IMPORTANT: CRITICAL: You MUST be in us-east-1 (N. Virginia) to request this certificate. CloudFront only reads ACM certificates from us-east-1. Check your region selector before proceeding.

1. Confirm region: US East (N. Virginia) — us-east-1
2. Search for Certificate Manager → Request a certificate → Request a public certificate → Next
3. Fully qualified domain name: enter your registered domain name
4. Click Add another name and add the www. prefix version of your domain
5. Validation method: DNS validation → Request
6. Click the certificate ID → Create records in Route 53 → Create records
7. Wait 5–15 minutes and refresh — status must change to Issued

X IMPORTANT: Do NOT proceed to Step 4 until the certificate status shows Issued.

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**Amazon CloudFront
Create a CloudFront Distribution**

1. Search for CloudFront → Create distribution
2. Origin domain: select your S3 bucket website endpoint (ends in .s3-website-us-east-1.amazonaws.com)
3. Origin protocol: HTTP only
4. Viewer protocol policy: Redirect HTTP to HTTPS
5. Alternate domain names (CNAME): add your domain and www. version of your domain
6. Custom SSL certificate: select the certificate from Step 3
7. Default root object: index.html → Create distribution
8. Wait 5–15 minutes for status: Deploying → Enabled
9. Copy the Distribution domain name (e.g. d1234abcdef.cloudfront.net) — save for Step 5

■ **NOTE:** Use the S3 website endpoint, NOT the REST endpoint. Website endpoint format: bucket-name.s3-website-us-east-1.amazonaws.com

✓ **TIP:** Test now by pasting the CloudFront domain name into your browser. Your site should load over HTTPS.

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Amazon Route 53 — DNS Records Create DNS Records Pointing to CloudFront

Root domain A record

1. Route 53 → Hosted zones → click your domain → Create record
2. Record name: BLANK (root domain) | Type: A | Alias: ON
3. Route traffic to: Alias to CloudFront distribution → select your distribution → Create records

www subdomain A record

1. Create record → Record name: www | Type: A | Alias: ON
2. Route traffic to: Alias to CloudFront distribution (same distribution) → Create records

Test DNS Propagation

1. Wait 5–15 minutes
2. Visit <http://yourdomain.com> — should redirect to <https://yourdomain.com>
3. Click the padlock icon to confirm the certificate is valid
4. Also test <https://www.yourdomain.com>

✓ **TIP:** Check global propagation at dnschecker.org. Enter your domain — usually complete in under 15 minutes with Route 53.

Verification Checklist

- <http://yourdomain.com> redirects to <https://yourdomain.com>
- <https://yourdomain.com> loads index.html correctly
- <https://www.yourdomain.com> loads correctly
- Browser padlock shows Certificate is valid
- CloudFront distribution status shows Enabled
- ACM certificate status shows Issued
- Route 53 hosted zone has A records for root domain and www

What You Learned

- Amazon Route 53 — domain registration, hosted zones, DNS record types, and alias records
- AWS Certificate Manager — requesting free SSL/TLS certificates and DNS validation
- Amazon CloudFront — CDN distributions, SSL certificates, and HTTP-to-HTTPS redirection
- DNS propagation — how DNS changes spread globally and how to verify propagation status
- HTTPS and SSL/TLS — how certificates secure web traffic and the role of a CDN

Lab Cleanup — Delete Your Resources

✗ **IMPORTANT:** Follow this order to avoid dependency errors.

#	Resource	How to Delete
1	CloudFront Distribution	CloudFront → Disable first, wait until Disabled, then Delete
2	ACM Certificate	Certificate Manager (us-east-1) → Certificates → Delete
3	Route 53 A Records	Route 53 → Hosted zone → select both A records → Delete records
4	S3 Bucket Contents	S3 → bucket → select all → Delete → type permanently delete
5	S3 Bucket	S3 → select bucket → Delete bucket → type bucket name → confirm
6	Route 53 Hosted Zone	Only if no longer needed — Route 53 → Hosted zones → Delete

■ **NOTE:** Keep your Route 53 hosted zone if you plan to do more labs with this domain. \$0.50/month is the only ongoing charge once CloudFront is deleted.