AWS CloudFront

CloudFront is a fully managed, fast Content Delivery Network (CDN) service that offers easy and cost-effective way to distribute content with low latency and high data transfer speeds.

CloudFront delivers your static and dynamic web content, such as websites, apps, videos, APIs, images, etc. to viewers across the globe.

CloudFront speeds up the distribution of your content by routing each user request through the AWS backbone network to the edge location that gives your viewers a fast, safe, and reliable experience when they visit your website.

CloudFront uses multiple Edge locations and regional edge caches around the world to cache content to reduces the load on your origin server and as a result, viewer requests travel a short distance, improving performance for your viewers.

CloudFront keeps persistent connections with your origin servers so that those files can be fetched from the origin servers as quickly as possible.

You can create CloudFront distribution to deliver video on demand (VOD) or live streaming video with any live video origination service that using HTTP origin, such as AWS Elemental MediaPackage or AWS Elemental MediaStore.

CloudFront offers programmable and secure edge CDN computing capabilities through CloudFront Functions and AWS Lambda@Edge.

Using HTTPS connections and field-level encryption you can encrypt and secure communication between viewer clients and CloudFront.

Using signed URLs/cookies and through geo-restriction capability, you can restrict access to your content, so that only specific people, or people in a specific area, can view it.

You can restrict access to content using signed URLs or cookies or to objects in S3 bucket using bucket policy.

With Origin Access Identity (OAI) feature, access can be restricted to S3 bucket, making it only accessible from CloudFront.

CloudFront Geo Restriction feature lets you specify the countries in which your users can/cannot access your content.

CloudFront works seamlessly with AWS Shield, AWS Web Application Firewall (WAF), and Amazon Route 53 to create a flexible, layered security perimeter against multiple network and application layer DDoS attacks.

CloudFront works seamlessly with Amazon S3 bucket, a MediaStore container, a MediaPackage channel, an Application Load Balancer, or an AWS Lambda function URL. as origins for your applications.

CloudFront is integrated with CloudWatch, and automatically publishes six operational metrics per distribution, which are displayed in a set of graphs in the CloudFront console.

CloudFront provides two ways to log the requests delivered from your distributions:

1. Standard logs - are delivered to S3 bucket.
2. Real-time logs - logs are delivered to Kinesis Data Streams

CloudFront is compliant with PCI DSS, SOC, and HIPAA.

It is a self-service, pay-per-use offering, requiring no long-term commitments or minimum fees.

The maximum size of a single file that can be delivered through CloudFront is 30 GB.

Billing

CloudFront charges are based on actual usage of the service in five areas:

1. Data Transfer Out,

2. HTTP/HTTPS Requests,

3. Invalidation Requests,

4. Real-time Log Requests,

5. Dedicated IP Custom SSL certificates associated with a CloudFront distribution.

CloudFront Benefits

1. Cost-Effective

2. Timesaving

3. Content Privacy

4. Highly Programmable

5. Geo-Targeting

6. Accelerates static website content delivery.

7. Serve on-demand on live streaming videos.

What is CloudFront Distribution?

CloudFront Distribution is a set of rules that controls how CloudFront will access the content you want to deliver.

What is CloudFront Origin?

CloudFront Origin is a source of content.

Amazon S3 bucket, a MediaStore container, a MediaPackage channel, an Application Load Balancer, or an AWS Lambda function URL.

What are WebSocket?

WebSocket is a real-time communication protocol that provides bidirectional communication between a client and a server over a long-held TCP connection.

By using a persistent open connection, the client and the server can send real-time data to each other without the client having to frequently reinitiate connections checking for new data to exchange. WebSocket connections are often used in chat applications, collaboration platforms, multiplayer games, and financial trading platforms.

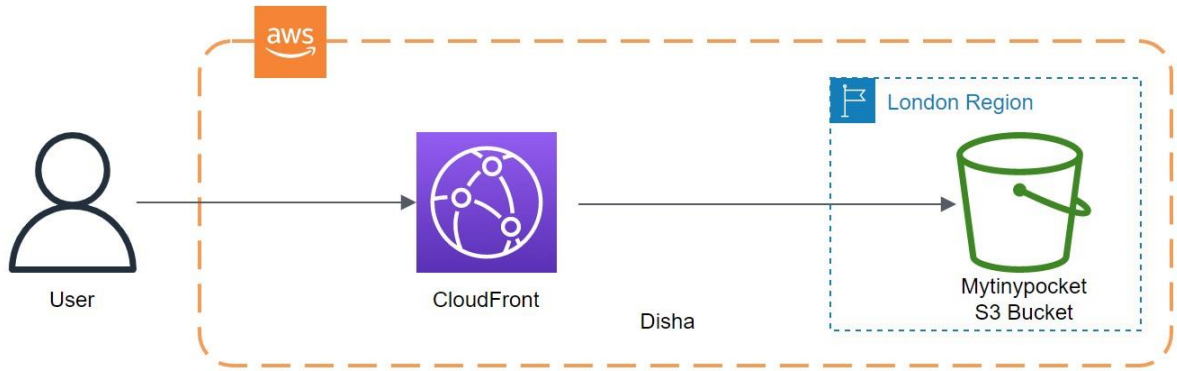
What is Field-Level Encryption?

Field-Level Encryption is a feature of CloudFront that allows you to securely upload user-submitted data such as credit card numbers to your origin servers.

What is CloudFront Functions?

CloudFront Functions is a serverless edge compute feature allowing you to run JavaScript code at the CloudFront edge locations for lightweight HTTP(s) transformations and manipulations. Functions is purpose-built to give customers the flexibility of a full programming environment with the performance and security that modern web applications require.

AWS Lab CloudFront Distribution:



Step 1: Upload your content to Amazon S3 and grant object permissions to everyone.

Sign into the AWS Management Console and open the Amazon S3 console at https://console.aws.amazon.com/s3/.

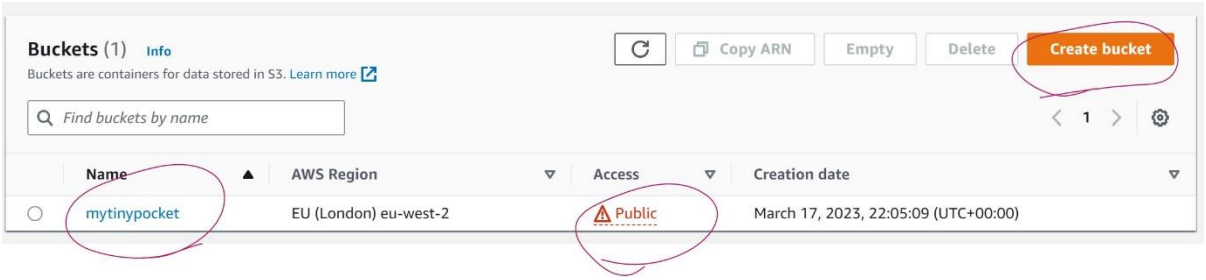
Choose **Create bucket**.

For **Bucket name**, enter a bucket name “mytinypocket”.

For **Region**, choose an AWS Region for your bucket.

In the Block Public Access settings for bucket section, clear the check box for Block all public access.

Leave all other settings at their defaults, and then choose Create bucket.



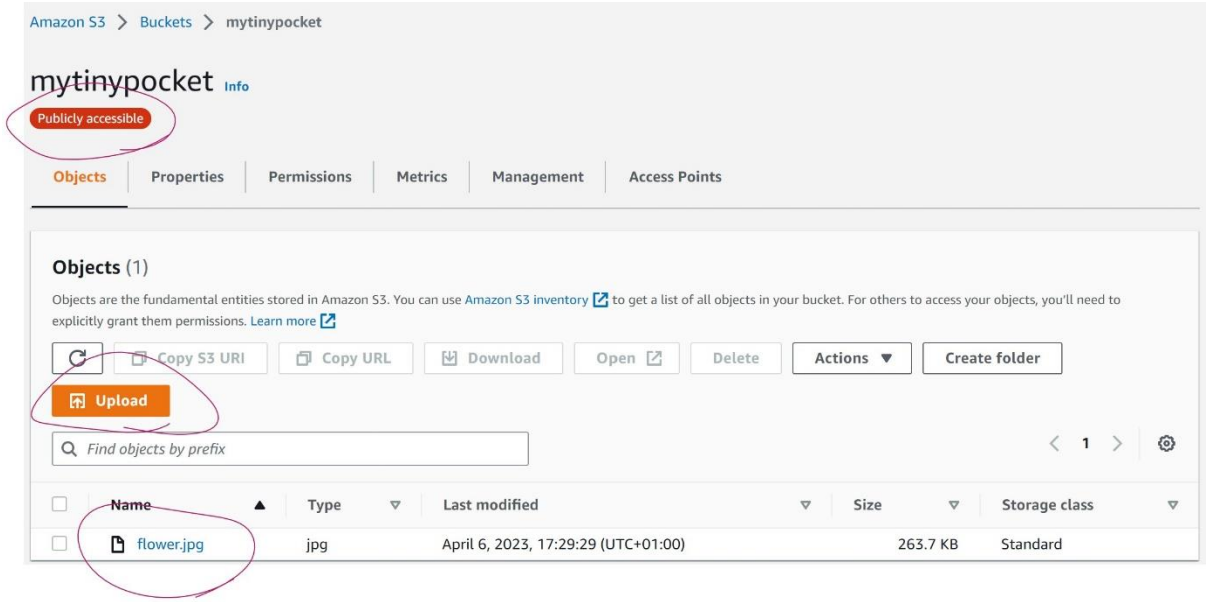
In the **Buckets** section, choose your bucket, and then choose **Upload**.

Use the Upload page to add your content to the S3 bucket.

In the **Access control list (ACL)** section, select the check box for **Read** next to **Everyone (public access)** in the **Objects** column.

Select the check box for **I understand the effects of these changes on the specified objects.**

At the bottom of the page, choose **Upload**.

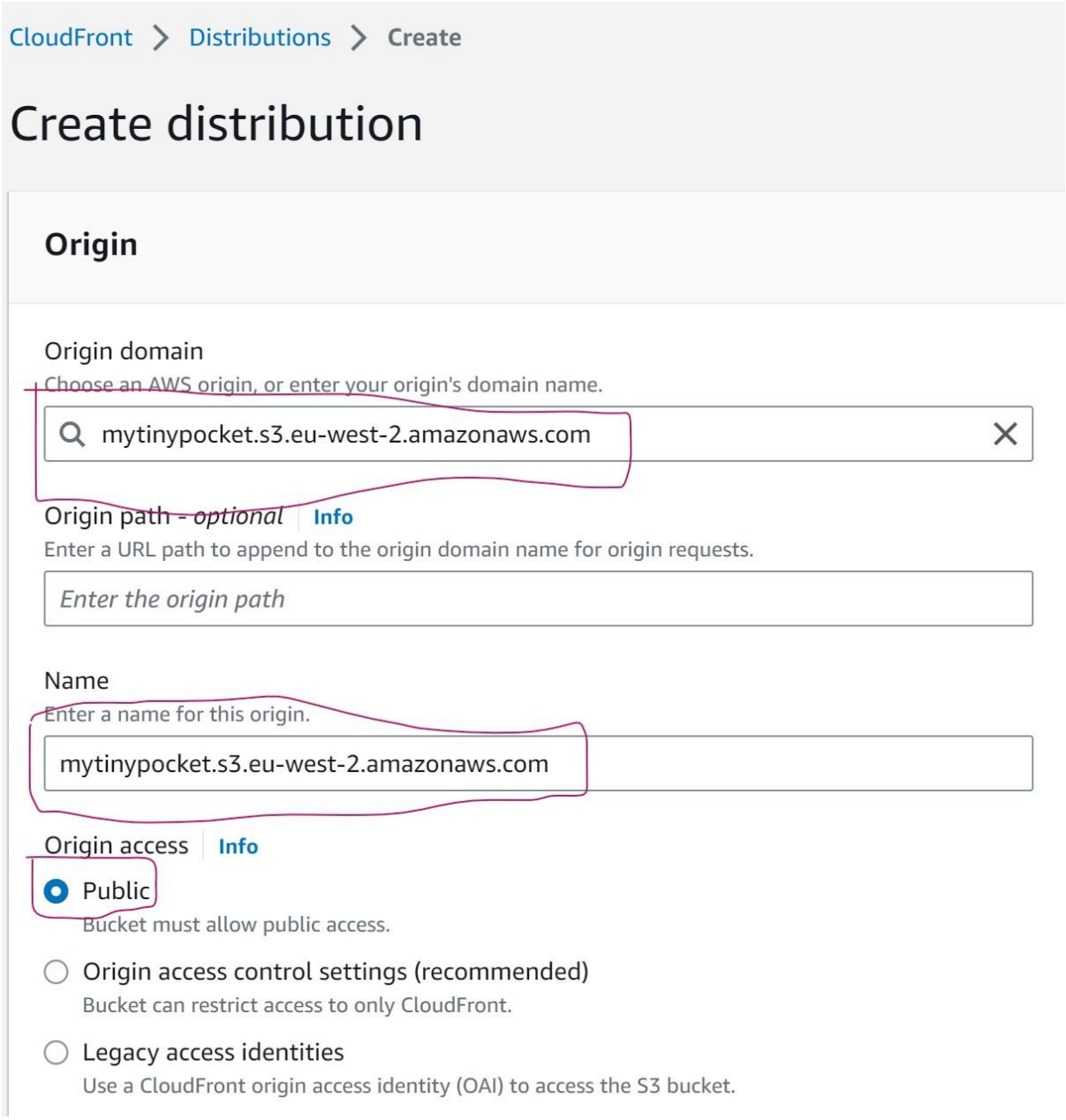


Step 2: Create a CloudFront distribution.

Open the CloudFront console at https://console.aws.amazon.com/cloudfront/v3/home.

Choose **Create distribution**.

Under **Origin**, for **Origin domain**, choose the Amazon S3 bucket that you created earlier.



For the other settings under **Origin**, accept the default values.

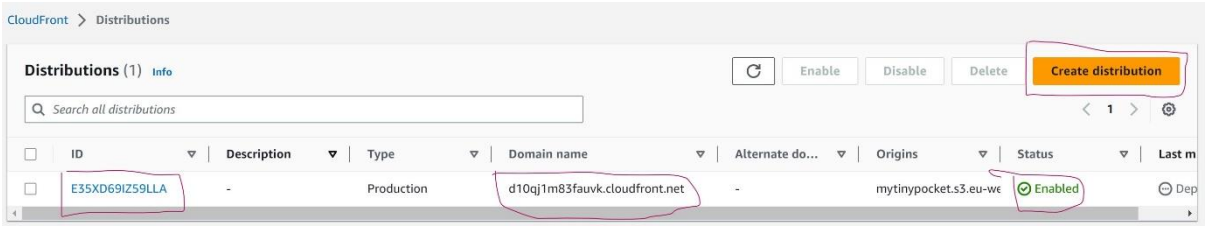
For the settings under **Default cache behavior**, accept the default values.

For the remainder of **Settings**, accept the default values.

At the bottom of the page, choose **Create distribution**.

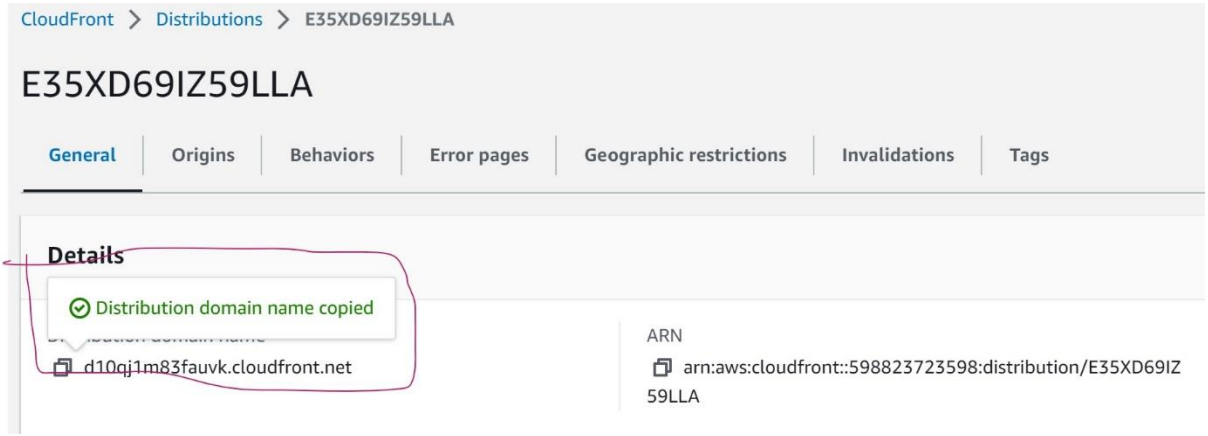
After CloudFront creates your distribution, the value of the **Status** column for your distribution changes from **In Progress** to **Deployed**. This typically takes a few minutes.

Record the **domain name** that CloudFront assigns to your distribution, which appears in the list of distributions.



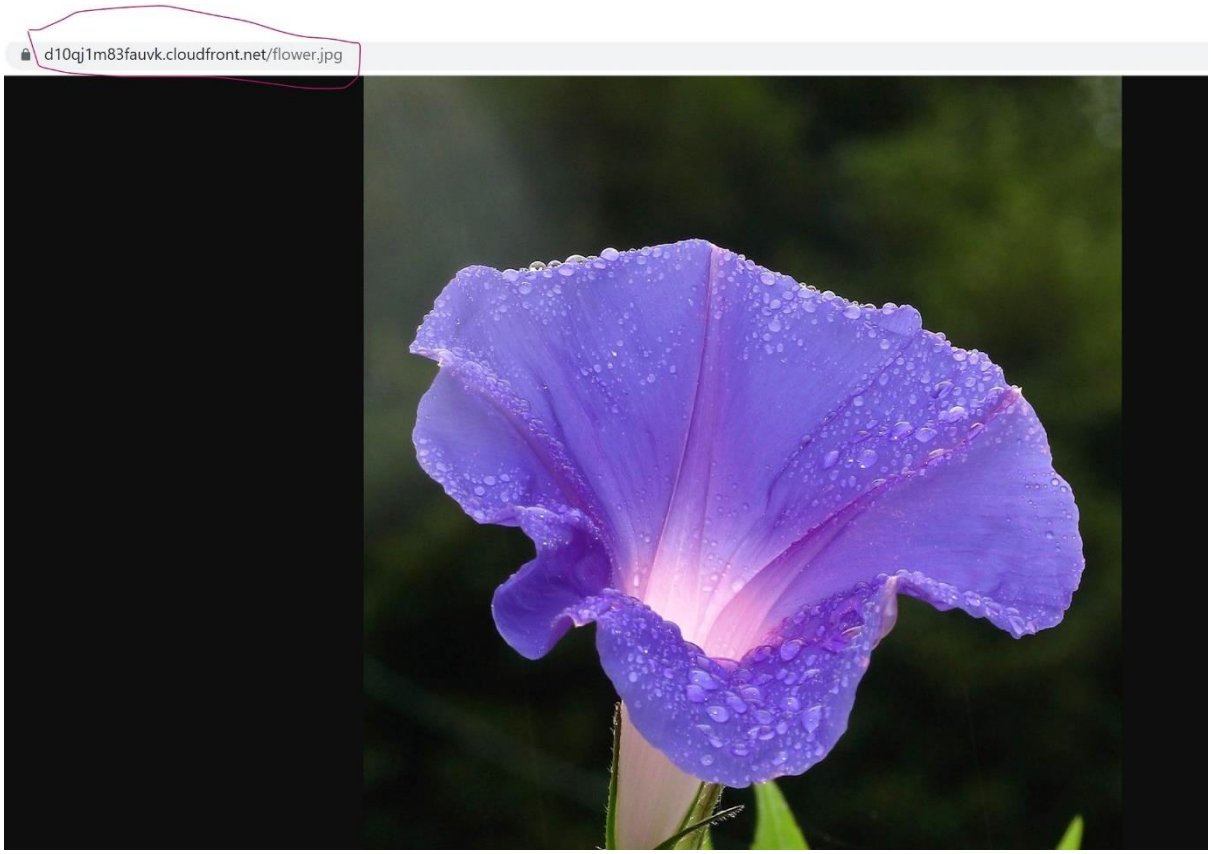
Step 3: Access your content through CloudFront.

To access your content through CloudFront, combine your CloudFront distribution domain name with the path to access your content.



You get error.

To solve, combine your CloudFront distribution domain name with the path and your object name.



You have successfully configured CloudFront to serve your website’s content that’s stored in Amazon S3.