

Video: Exercise 2.1
Introduction
1 min

Reading: Exercise 2.1:
Creating a CloudFront
Distribution
45 min

Quiz: Amazon
CloudFront
3 questions

Taking to the back-
end/Amazon API
Gateway

Video: Introduction to
Amazon API Gateway and
Demo
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Week 2 Resources and
Discussion

Exercise 2.1: Creating a CloudFront Distribution

Exercise 2.1: Creating a CloudFront distribution

We already have a working static website. How can we make it perform better?

As that was last week, bring up the website in Chrome and remind yourself of what we have done.

We would now like to put a content delivery network (CloudFront) in-front of our static website host (S3) which we call the "origin".

Doing this will give our users around the world a lower latency, as Adam talked about.

It will also alleviate the load that is placed on the origin bucket.

Once we configure the next few steps for setting up the content delivery network (Amazon CloudFront) it usually takes around 10 to 15 minutes to fully propagate. During that time we will go back to the S3

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1. Steps for creating a CloudFront distribution

- Sign in to the AWS Management Console and in the **Find Services** search box type cloud and choose **CloudFront**.
- You should **Global** for the region at the top right.
- Click **Create Distribution**.
- Under **Web** click **Get Started**.
- For **Origin Domain Name** once you place the cursor in there you should see your available S3 buckets.
- Pick the website bucket you created.
- If it's not listed type it in: e.g `2019-03-01-er-website.s3.amazonaws.com` *Using your bucket name*
- Leave **Origin Path** blank.
- The **Origin ID** should have been pre-populated when you chose your bucket.
- Click **Yes to Restrict Bucket Access**.
- Under **Origin Access Identity** select **Create a New Identity**.
- It will pre-populate the **Comment** and append the bucket name.
- For **Grant Read Permissions on Bucket** check **Yes, Update Bucket Policy**. This will update the bucket policy for us.
- Leave the **Origin Custom Headers** blank.

Origin Settings

Origin Domain Name

2019-03-01-er-website.s3.amazonaws.com

Origin Access Identity

Create a New Identity

Use an Existing Identity

Comment

access-identity-2019-03-01-er-website.s3

Grant Read Permissions on Bucket

Yes, Update Bucket Policy

No, I Will Update Permissions

Origin Custom Headers

Header Name

Value

- For the **Default Cache Behavior Settings** section:
- Under **Viewer Protocol Policy** select **Redirect HTTP to HTTPS**.
- For **Allowed HTTP Methods** choose **GET, HEAD**.
- Leave **Field-level Encryption Config** blank.
- Leave **GET, HEAD (Cached by default)** for **Cached HTTP Methods**.
- For **Cache Based on Selected Request Headers** leave it as the default **None (Improves Caching)**.
- For **Object Caching** also leave it at the default **Use Origin Cache Headers**.

Path Pattern

Default (*)

Viewer Protocol Policy

HTTP and HTTPS

Redirect HTTP to HTTPS

HTTPS Only

Allowed HTTP Methods

GET, HEAD

GET, HEAD, OPTIONS

GET, HEAD, OPTIONS, PUT, POST, PATCH, DELETE

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Object Caching

Use Origin Cache Headers

Customize

Learn More

Minimum TTL

0

Maximum TTL

31536000

Default TTL

86400

- Under **Forward Cookies** leave it as **None (Improves Caching)**.
- Also for **Query String Forwarding and Caching** leave as **None (Improves Caching)**.
- For **Smoothing Streaming** select **No**.
- For **Restrict Viewer Access (Use Signed URLs or Signed Cookies)** select **No**.
- Also leave **Compress Objects Automatically** as **No**.

Forward Cookies

None (Improves Caching)

Query String Forwarding and Caching

None (Improves Caching)

Smooth Streaming

Yes

No

Restrict Viewer Access

Use Signed Cookies or Signed URLs

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Week 2 Resources and
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Lambda Function Associations

CloudFront Event

Select Event Type

Lambda Function ARN

Include Body

Price Class

Use All Edge Locations (Best Performance)

AWS WAF Web ACL

None

Alternate Domain Names (CNAMEs)

SSL Certificate

Default CloudFront Certificate (*.cloudfront.net)

Choose this option if you want your users to use HTTPS or HTTP to access your content with the CloudFront domain name (such as https://d111111abcdefg.cloudfront.net/logo.jpg). Important: If you choose this option, CloudFront requires that browsers or devices support TLSv1 or later to access your content.

Custom SSL Certificate (example.com)

Choose this option if you want your users to access your content by using an alternate domain name, such as https://www.example.com/logo.jpg. You can use a certificate stored in AWS Certificate Manager (ACM) in the US East (N. Virginia) Region, or you can use a certificate stored in IAM.

Request or Import a Certificate with ACM

Learn more about using custom SSL/TLS certificates with CloudFront.

Learn more about using ACM

- We can leave **Logging** set to **Off**.
- Leave **Enable IPv6** checked.
- Finally set **Distribution State** to **Enabled**.

Supported HTTP Versions

HTTP/2, HTTP/1.1, HTTP/1.0

HTTP/1.1, HTTP/1.0

Default Root Object

text.html

Logging

On

Off

Bucket for Logs

Log Prefix

Cookie Logging

On

Off

Enable IPv6

Yes

No

Learn more

Comment

Distribution State

Enabled

Disabled

- Click **Create Distribution**.

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While we wait, we'll head over to S3 and lock down access to only allow calls from CloudFront.

2. Restrict our S3 bucket policy to CloudFront

- Click **Services** at the top left and type in S3 or select it from History.
- Click your bucket `2019-mm-dd-xx-website`. IMPORTANT: Your bucket will have a different name.
- Click **Permissions**.
- Select **Bucket Policy**.
- We can see that CloudFront has added what we call an "Origin Access Identity" to the policy.

```
1 {
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Sid": "AddPerm",
6       "Effect": "Allow",
7       "Principal": "*",
8       "Action": "s3:GetObject",
9       "Resource": "arn:aws:s3:::2019-03-01-er-website/*"
10    },
11    {
12      "Sid": "2",
13      "Effect": "Allow",
14      "Principal": {
15        "AWS": "arn:aws:iam::cloudfront:user/CloudFront Origin Access Identity E1K02GAP1WF7X"
16      },
17      "Action": "s3:GetObject",
18      "Resource": "arn:aws:s3:::2019-03-01-er-website/*"
19    }
20  ]
21 }
```

```
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Sid": "2",
6       "Effect": "Allow",
7       "Principal": {
8        "AWS": "arn:aws:iam::cloudfront:user/CloudFront Origin Access Identity E1K02GAP1WF7X"
9      },
10      "Action": "s3:GetObject",
11      "Resource": "arn:aws:s3:::2019-03-01-er-website/*"
12    }
13  ]
14 }
```

- This will only allow our specific CloudFront distribution access to our S3 bucket which is what we want.
- Click **Save** and grab a cup of coffee while we wait for the CloudFront Distribution to finish baking.

3. Steps for testing that we successfully locked down S3 from public view

- Browse to **your** S3 endpoint: Example: `http://2019-03-01-er-website.s3-website-us-east-1.amazonaws.com/`
- You will see a **403 Forbidden** as we effectively removed public access via the bucket policy.

403 Forbidden

- Code: AccessDenied
- Message: Access Denied

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- Browse to that URL and you should now see the **text.html** page.
 - Remember the distribution may take up to 15 minutes to complete.
- Next we will wire up our static website to a backend API.
- Awesome, we are moving through our exercise goal list nicely.

Exercise goal checklist

- Create a simple chatbot using the lex console.
- Upload our website to S3.
- Create a content delivery network and lock down S3.
- Build an API gateway mock with CORS.
- Build a Lambda mock, use IAM, push logs to CloudWatch.
- Create and seed a database with weather data.
- Enhance the lambda, so it can query the database.
- Play with your new text based data driven application.
- Create a LEX proxy using Lambda.
- Enhance API gateway to use the LEX proxy.
- Play with your new voice web application.