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Exercise 2.2 Amazon API Gateway

Exercise 2.2: Creating an API Gateway endpoint and wiring it up to our web site

We have a website sitting on S3 being exclusively delivered via CloudFront, but the problem is that the website is static.

This means when you are interacting with it is "faking it". It is hard-coded in the Javascript to replay with "the temperature in X is 20 degrees".

We need to have our website's JavaScript hit an endpoint in the cloud and return data from that. Perhaps a different temperature say, 69 degrees. That way when we test it we will know it is hitting our API successfully.

Creating a backend API is easy using Amazon API gateway.

Before we create an API that does anything fancy, such as look up weather data from a database or run

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functionality behind it. We will look at server-less functions next week with John, for now, let's get this mock API built and tested.

1. Steps for creating a REST endpoint with API Gateway

- Sign in to the AWS Management Console and in the **Find Services** search box type api and choose **API Gateway**.
- Make sure you are in the **N. Virginia** region at the top right.
- Click **Get Started** and click **OK** to remove the Create Example API pop-up.
  - If you already have APIs click **Create API**
- Choose protocol **REST**
- Under Create new API choose **New API**.

- For settings use the following:
  - API name: **CatWeather**;
  - Optionally, add a brief description in **Description**.
  - Endpoint Type: **Regional**.

Choose the protocol

Select whether you would like to create a REST API or a WebSocket API.

REST WebSocket

Create new API

An Amazon API Gateway a RESTF API refers to a collection of resources and methods that can be invoked through HTTPS endpoints.

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API name* CatWeather
Description
Endpoint Type Regional

- Click **Create API**.
- Click **Actions** and **Create Method**.

Resources Actions / Methods
/ Delete Resource
Create Method

- Choose **POST** from the list under the / resource and click the **check mark icon.**

/ POST

- For **Integration type** choose **Mock** and click **Save**.
- Click **TEST**.

- Under **Request Body** enter in:

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- Click **HERE** and you should get back something similar in the logs section:

Under Response Body:

```
{ ok: data }
```

And under Response Headers:

```
{"Content-Type":"application/json"}
```

Logs should look similar to:

```
1  HTTP Method: POST, Resource Path: /
2  Method request path: {}
3  Method request query string: {}
4  Method request headers: {}
5  Method request body before transformations: {
6    "life_ok": "FOUND"
7  }
8  Method response body after transformations:
9  Method response headers: {Content-Type=application/json}
10 Method response status: 200
11 Method completed with status: 200
```

- Scroll up and click **Method Execution** **Method Execution** to go back to the test settings.
- Click **Integration Request**.
- Click the arrow to open up the request parameters.

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HTTP status regex | Method response status | Output model | Default mapping
.+ | 200 | | Yes

Step 1: Create a new mapping

HTTP status regex .+
Content-Type | Passthrough

Cancel Save

Header Mappings
Mapping Templates
Content-Type
application/json
No mapping template

- Click on **application/json** blue hyperlink under **Content-Type**.
- Under **General template** choose **Method Request passthrough**.
- Replace it all with:

```
{ ok
}
```

- Click **Save** at the bottom right.

Generate template: Method Request passthrough

```
{ ok
}
```

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Cancel Save

- **Also** click **Save** at the top right.
- Choose **Method Execution** again.
- Click **Test**.
- Set the request body as:

```
{ ok
}
```

- click **Test** again.
- You should see the following:

Under Response Body:

```
{ ok
}
```

Response Headers:

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Logs should show something similar to:

```
1  Execution log for request 5c3f8d27-1f6b-11e7-9e8c-a7cf5e7e6c2c
2  Method completed with status: 200
3  HTTP Method: POST, Resource Path: /
4  Method request path: {}
5  Method request query string: {}
6  Method request headers: {}
7  Method request body before transformations: {
8    "life_ok": "FOUND"
9  }
10 Method response body after transformations: {
11   "temp_int": 69
12 }
13
14 Method response headers: {Content-Type=application/json}
15 Method response status: 200
16 Method completed with status: 200
```

Awesome! We have a working MOCK API that returns hard coded data.

Now we need to wire this up to our website, but there's a problem.

The problem is that our website is being hosted via a CloudFront domain name, and this API (once we publish it) will be available at a different API Gateway domain names, and the browser will bark at you if you try to go across domains.

Basically, if you try to bring in content from a different domain the browser needs to be sure that it is allowed to be pulled into that current domain.

The way we let the browser know that it is ok for a website of a different domain (CF) to get information from us our API Gateway endpoint is to set up what we call CORS (Cross Origin Resource Sharing).

Luck for us, this is very easy to do via the API Gateway console. For simplicity we will say any website

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2. Steps to enable CORS in the API gateway console.

- Click on the resource / (NOT POST) /
- Select **Actions** and **Enable CORS**.
- Select **DEFAULT 4XX and DEFAULT 5XX**. Leave the other settings as the default.

Gateway Responses for CatWeather API
DEFAULT 4XX DEFAULT 5XX
Methods
ANY POST / OPTIONS
Access-Control-Allow-Methods* POST,OPTIONS
Access-Control-Allow-Headers* 'Content-Type,X-Amz-Date,Authorization'
Access-Control-Allow-Origin* '*'
Advanced

- Click **Enable CORS and replace existing CORS headers**.
- Click **Yes, replace existing values** on the **Confirm method changes** pop-up.
- Click **Actions** and choose **Deploy API** under API Actions.
- On the **Deploy API** settings pop-up select:
  - Deployment stage **[New Stage]**
  - Stage name: `test`;
  - Stage description: `test`;
  - Click **Deploy**.

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```
1 {
2   "message": "Missing Authentication Token"
3 }
```

Now our mock API is tested, CORS is enabled and fully deployed. We need to have our website call that endpoint to get weather data (always 69 degrees as it is a MOCK remember).

3. Steps to wire up your mock API to your website

You don't have to write any code for this next bit. All you need to do is change the `API_GATEWAY_URL_STR` value in the website's `/assets/js/main.js` file. Save it, and re-upload it back to S3, CloudFront will pick up the changes to S3 automatically.

- On you local machine, open the folder where you unzipped the file and edit the file `s3website/assets/js/main.js`.
- Replace the `var API_GATEWAY_URL_STR` with the **Invoke URL** you copied from step 2.
- It will look like this:

```
var API_GATEWAY_URL_STR = null;
```

- Use your own deployed API gateway URL (above). Like in this example:

```
var API_GATEWAY_URL_STR = "https://tour.invoke-URL.execute-api.us-east-1
/development/catinfo";
```

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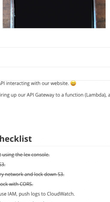
- Browse to your website (i.e your CloudFront distribution URL)
- Choose a city, and press **Ask Weather Bot**.



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We now have a live MOCK API interacting with our website.

Next week we will look at wiring up our API Gateway to a function (Lambda), and will use IAM, and Cloudwatch.

See you next week!

Exercise goal checklist

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

Mark as completed

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