Code Camp

Lab 4 - Serverless Platforms

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Agenda

1. Sign up for Hook.io
2. Build a simple Hook.io endpoint
    1. This task will send an API call to a Spark Room
3. AWS
    1. Sign up for AWS
    2. Install our example API
    3. Test POST
    4. Test GET
    5. Remove the API

Simple Microservices @ Hook.io

Create a Hook.io Account

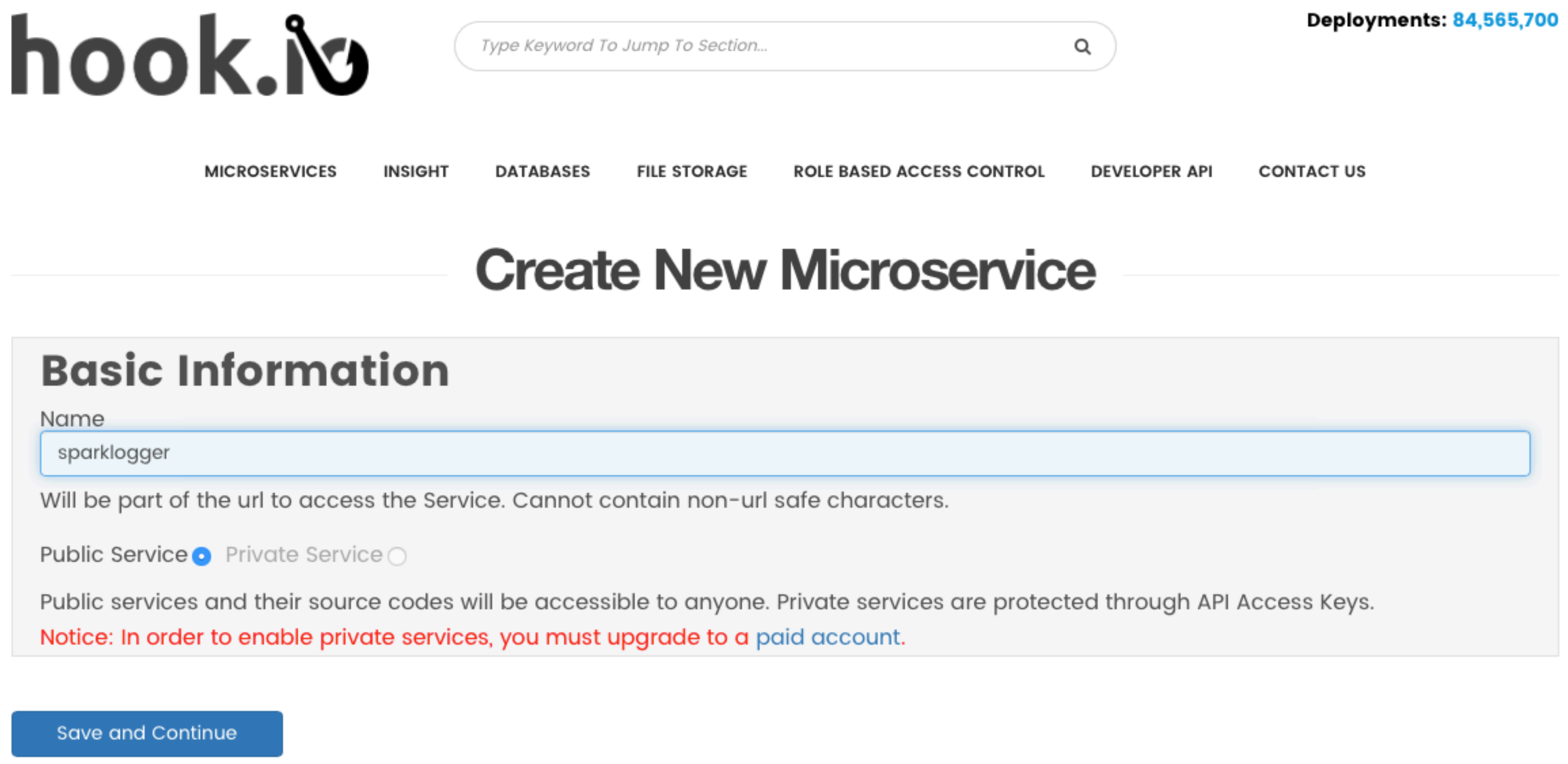
Make a function as a service process to call our Spark Logger.

Sign up for an account at Hook.io

Hook.io will give you a very simple click to start web hook service.

Add a new service at Hook.io

Click Create MicroService at the top navigation bar. - Call it **sparklogger**



Deployments: 84,565,700

Create New Microservice

Basic Information

Name: sparklogger

Will be part of the url to access the Service. Cannot contain non-url safe characters.

[✓ Public Service] Private Service

Public services and their source codes will be accessible to anyone. Private services are protected through API Access Keys.

Notice: In order to enable private services, you must upgrade to a paid account.

Copy Spark Logging Code

Copy `sparklogger.js` (in the Lab 4 Serverless Folder)
Paste/Save the content into a new hook at Hook.io called "sparklogger")
Your Hook.io URL for should looke like this

https://hook.io/jasonbarbee/sparklogger

It requires these parameters

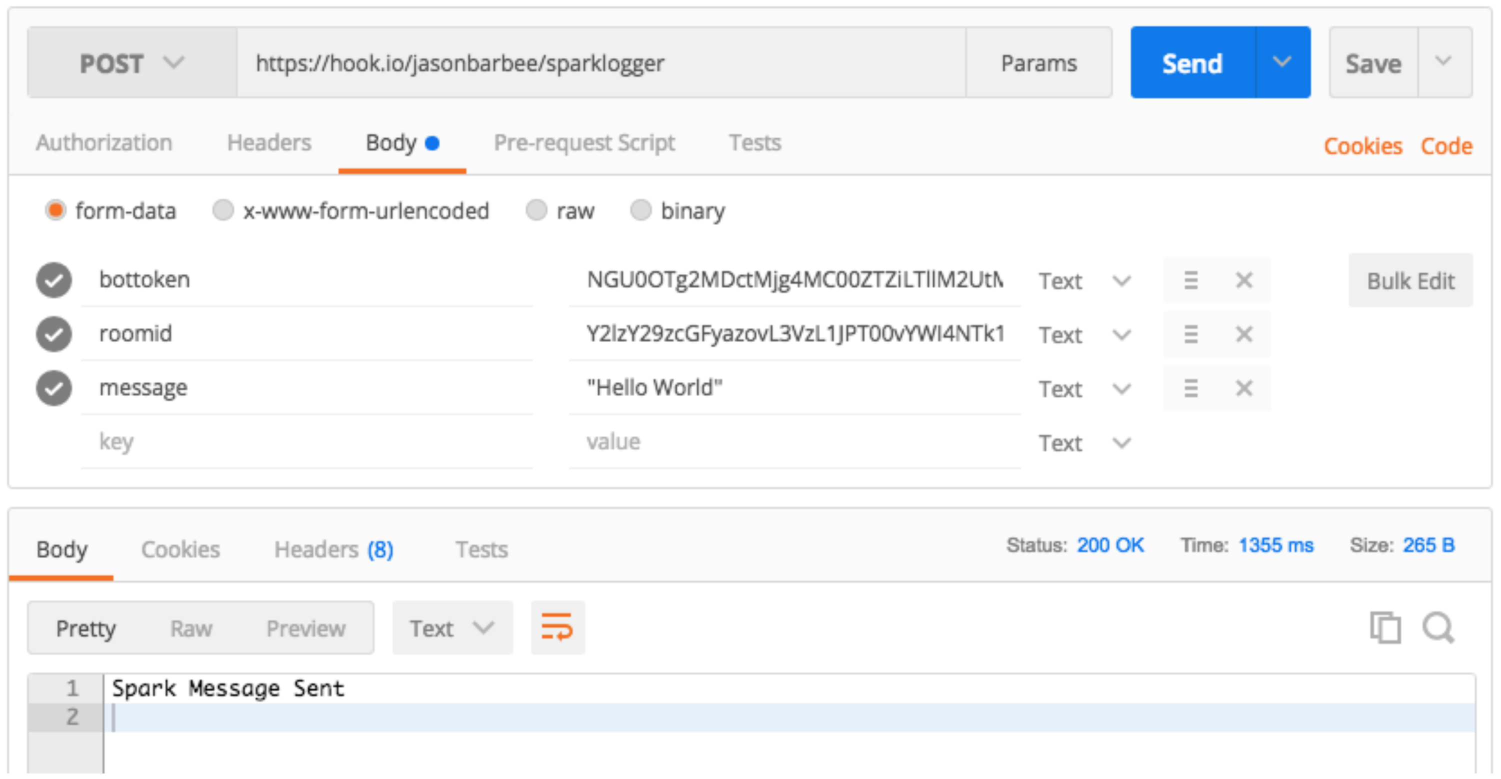
- bottoken - your authentication bot/person tokens
- roomid - the roomID in Spark that you want to post into.
- message - the content you want to post

Spark Logger Code

```
module['exports'] = function simpleHttpRequest (hook) {
  // npm modules available, see: http://hook.io/modules
    var request = require('request');
    var botToken= hook.params.bottoken;
    var roomId= hook.params.roomid;
    var text= hook.params.message;
    var body={"roomId": roomId , "text": text};
    var postReq = {
            url: "https://api.ciscospark.com/v1/messages",
            method: "POST",
            headers: {
                    'Accepts': 'application/json',
                    'Content-type': 'application/json',
                    'Authorization': "Bearer " + botToken
                    },
            json: body,
            };

    request.post(postReq,function(err, res, body){

    if (err) {
      console.log("Error", err.message);
      return hook.res.end(err.message);
    }
      //Check for right status code
    if(res.statusCode !== 200){
        console.log('Invalid Status Code Returned:', res.statusCode);
      return hook.res.end("Spark API Error " + res.statusCode);
    }

    //All is good. Print the body
      return hook.res.end("Spark Message Sent");
    });

};
```

Test it in Postman

Now if you call your URL
https://hook.io/jasonbarbee/sparklogger
with parameters bottoken, roomid, message
it should post our message...



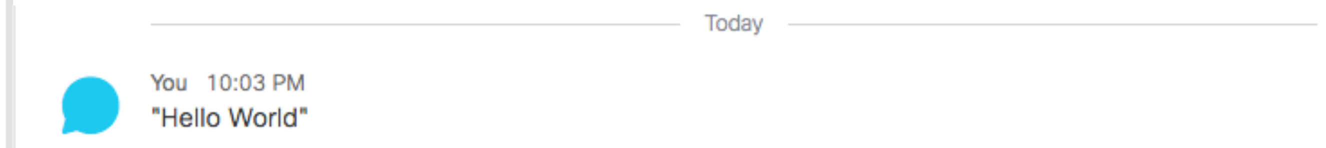
POST https://hook.io/jasonbarbee/sparklogger

Body: form-data

key	value	
bottoken	NGU0OTg2MDctMjg4MC00ZTZiLTllM2UtN	Text
roomid	Y2lzY29zcGFyazovL3VzL1JPT00vYWI4NTk1	Text
message	"Hello World"	Text

Status: 200 OK Time: 1355 ms Size: 265 B

```
Spark Message Sent
```



Today

You 10:03 PM
"Hello World"

Making a useful API

Let's make an API that creates,updates,deletes a router inventory.
We will use AWS API Gateway, AWS DynamoDB, and AWS Lambda.

And some Serverless Framework Magic.

Setup an account for Serverless to use your AWS

Create or login to your Amazon Web Services Account and go to the Identity & Access Management (IAM) page.

Click on Users and then Create New Users. Enter a name in the first field to remind you this User is the Framework, like serverless-admin. Then click Create. Later, you can create different IAM Users for different apps and different stages of those apps. That is, if you don't use separate AWS accounts for stages/apps, which is most common.

View and copy the API Key & Secret to a temporary place. You'll need it in the next step.

In the User record in the AWS IAM Dashboard, look for Managed Policies on the Permissions tab and click Attach Policy.

In the next screen, search for and select AdministratorAccess then click Attach.

Vagrant Check

This lab is designed to be run inside the Vagrant profile provided in the Code Camp Repo.
Make sure you have
CD to the vagrant-code-camp folder and run
"vagrant ssh" to access the Vagrant VM.
This Lab 4 is designed to run inside the Serverless Folder within that.

Give Severless AWS Access

Replace the keys below with your own.

```
serverless config credentials --provider aws --key myawesomekey --secret myawesomesecret
```

Let's deploy our prebuilt API

Change Directory to Serverless example

Code Camp Repo / Vagrant/Serverless

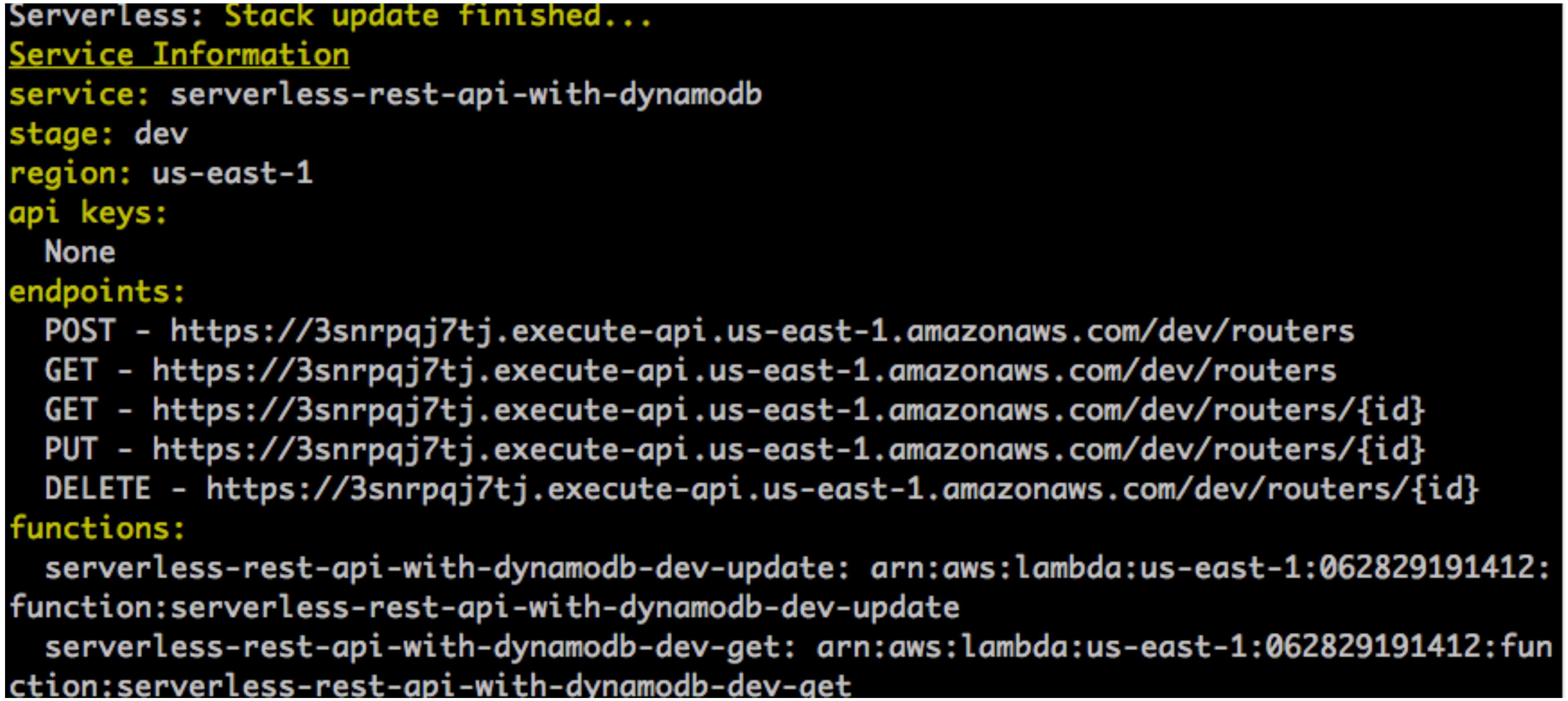
This next step will load the depedancy packages to the folder. If you don't do this step it will fail.

```
npm install
```

```
serverless deploy
```

Deployed!

This also shows you your REST endpoint URLs!



```
Serverless: Stack update finished...
Service Information
service: serverless-rest-api-with-dynamodb
stage: dev
region: us-east-1
api keys:
  None
endpoints:
  POST - https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers
  GET - https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers
  GET - https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers/{id}
  PUT - https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers/{id}
  DELETE - https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers/{id}
functions:
  serverless-rest-api-with-dynamodb-dev-update: arn:aws:lambda:us-east-1:062829191412:
function:serverless-rest-api-with-dynamodb-dev-update
  serverless-rest-api-with-dynamodb-dev-get: arn:aws:lambda:us-east-1:062829191412:fun
ction:serverless-rest-api-with-dynamodb-dev-get
```

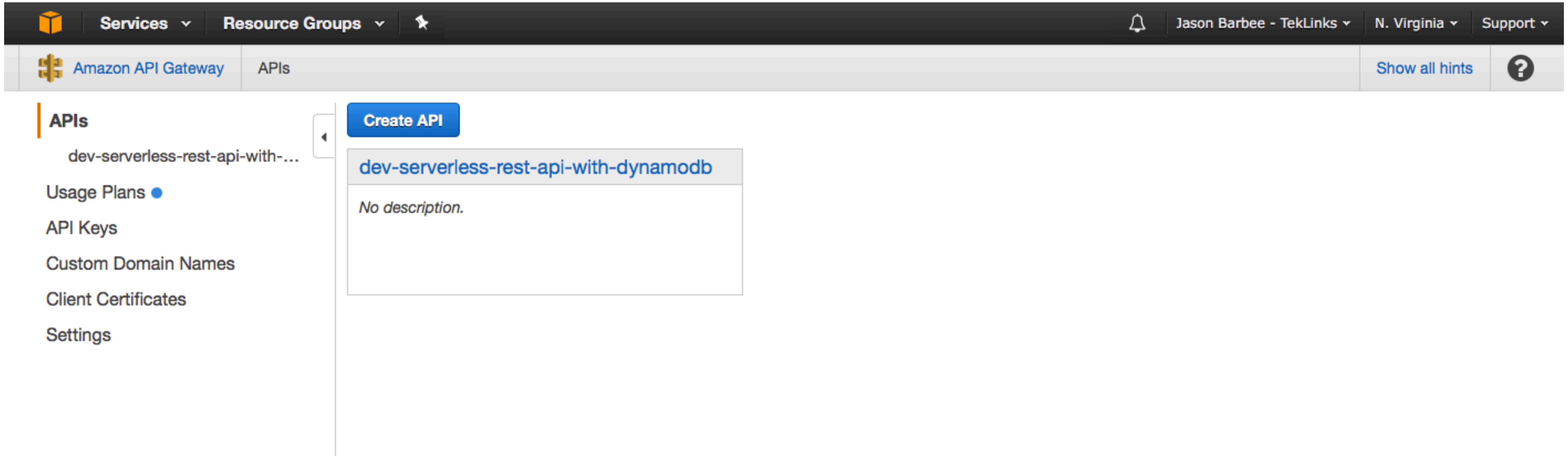
Open the API in your AWS Console

Make sure to choose "N. Virginia" on the top right of AWS console!

Select Amazon API Gateway service.

You should see our new service "dev-serverless-rest-api-with-dynamodb"

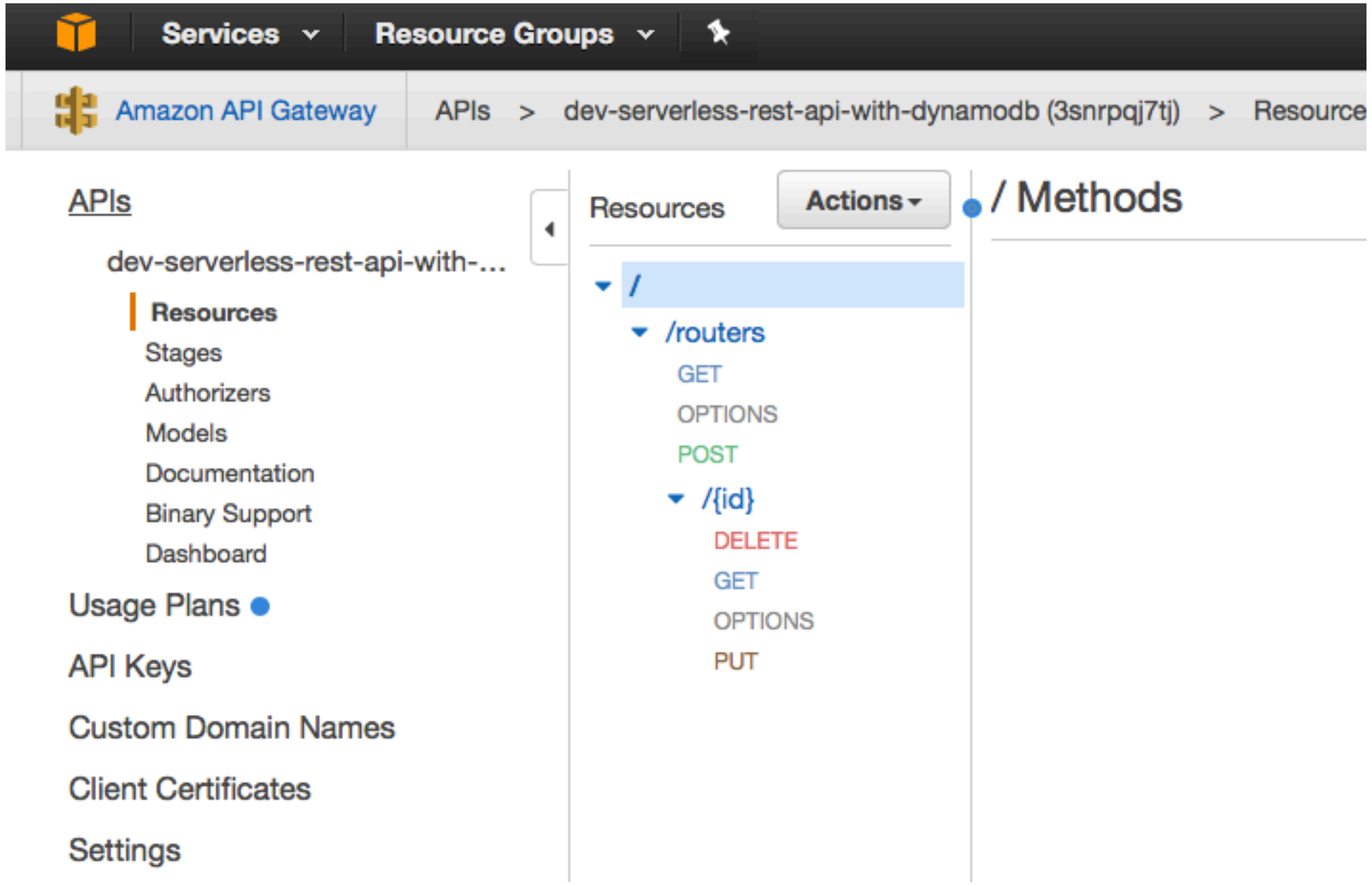
API Gateway Screenshot



dev-serverless-rest-api-with-dynamodb

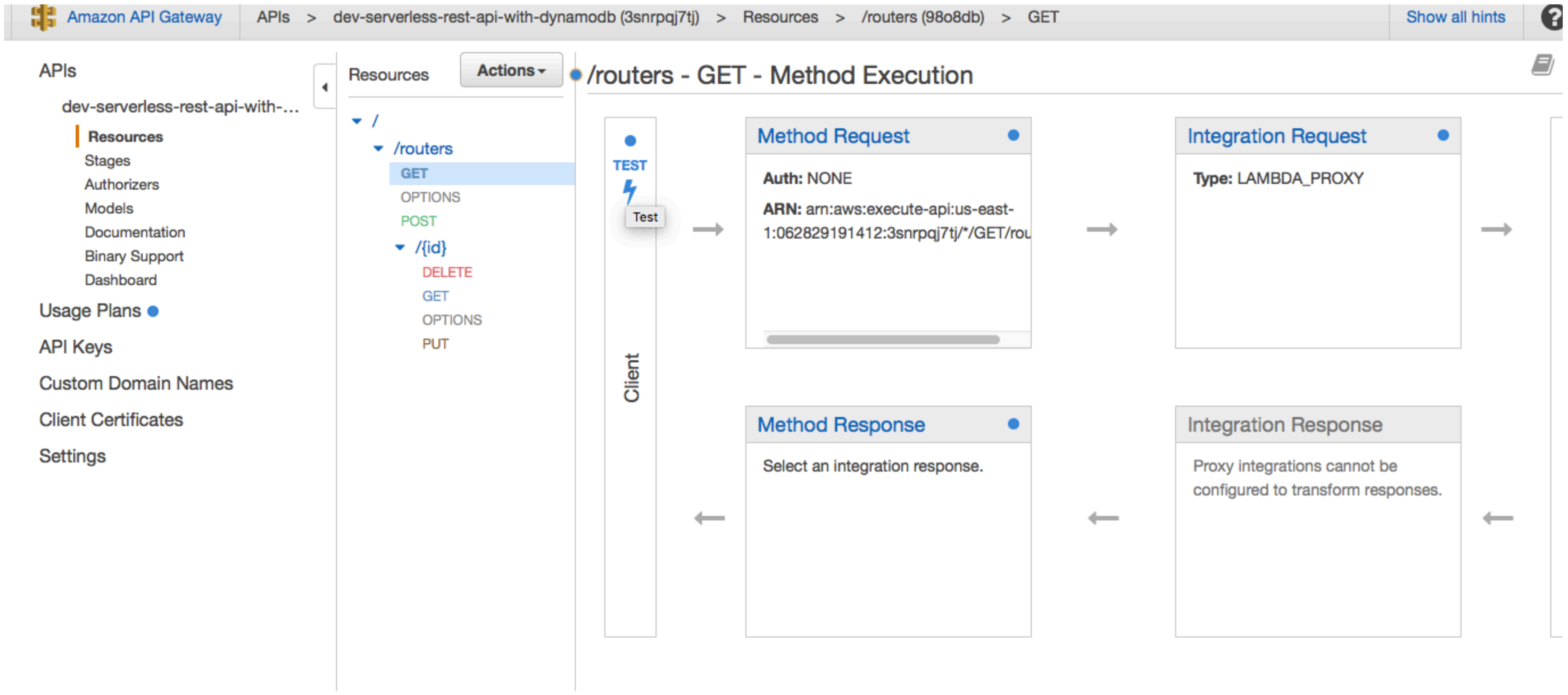
No description.

API Methods


Services
Resource Groups
Amazon API Gateway
APIs > dev-serverless-rest-api-with-dynamodb (3snrpqj7tj) > Resource
APIs
dev-serverless-rest-api-with-...
Resources
Stages
Authorizers
Models
Documentation
Binary Support
Dashboard
Usage Plans
API Keys
Custom Domain Names
Client Certificates
Settings
Resources
Actions
/
/routers
GET
OPTIONS
POST
/{id}
DELETE
GET
OPTIONS
PUT
/ Methods

Test our API

Click GET and click "TEST"



/routers - GET - Method Execution

Auth: NONE

ARN: arn:aws:execute-api:us-east-1:062829191412:3snrpqj7tj/*/GET/rou

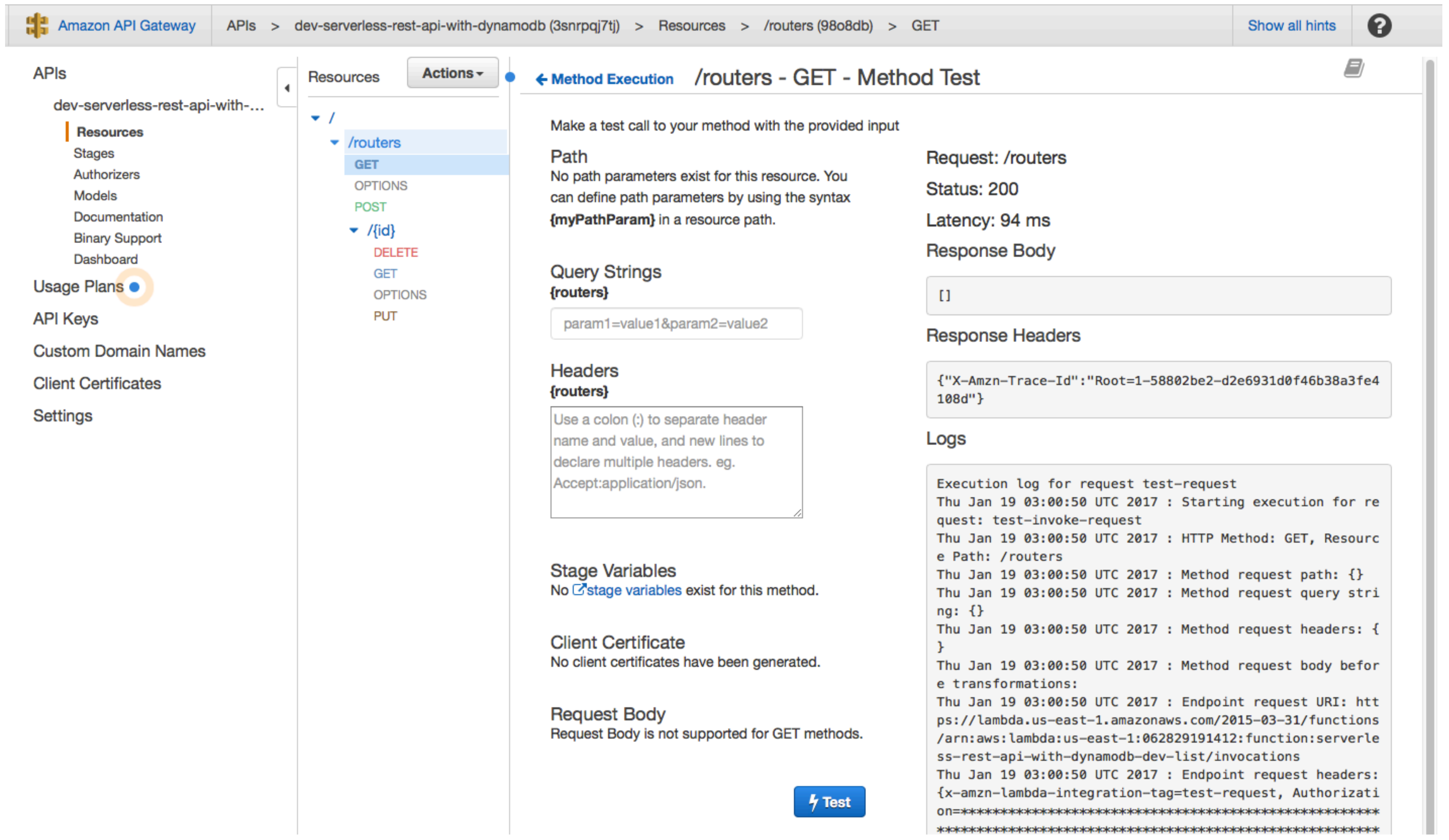
Type: LAMBDA_PROXY

Select an integration response.

Proxy integrations cannot be configured to transform responses.

Test GET Results

Top Right Status 200 is good. Right now there are no results in the right box. It's just a blank JSON object {}
We also get a stack trace of the console logs that happened during the method.



/routers - GET - Method Test

Make a test call to your method with the provided input

Path
No path parameters exist for this resource. You can define path parameters by using the syntax **{myPathParam}** in a resource path.

Query Strings
{routers}
param1=value1&param2=value2

Headers
{routers}
Use a colon (:) to separate header name and value, and new lines to declare multiple headers. eg. Accept:application/json.

Stage Variables
No stage variables exist for this method.

Client Certificate
No client certificates have been generated.

Request Body
Request Body is not supported for GET methods.

Request: /routers
Status: 200
Latency: 94 ms
Response Body

```
[]
```

Response Headers

```
{"X-Amzn-Trace-Id":"Root=1-58802be2-d2e6931d0f46b38a3fe4
108d"}
```

Logs

```
Execution log for request test-request
Thu Jan 19 03:00:50 UTC 2017 : Starting execution for re
quest: test-invoke-request
Thu Jan 19 03:00:50 UTC 2017 : HTTP Method: GET, Resourc
e Path: /routers
Thu Jan 19 03:00:50 UTC 2017 : Method request path: {}
Thu Jan 19 03:00:50 UTC 2017 : Method request query stri
ng: {}
Thu Jan 19 03:00:50 UTC 2017 : Method request headers: {
}
Thu Jan 19 03:00:50 UTC 2017 : Method request body befor
e transformations:
Thu Jan 19 03:00:50 UTC 2017 : Endpoint request URI: htt
ps://lambda.us-east-1.amazonaws.com/2015-03-31/functions
/arn:aws:lambda:us-east-1:062829191412:function:serverle
ss-rest-api-with-dynamodb-dev-list/invocations
Thu Jan 19 03:00:50 UTC 2017 : Endpoint request headers:
{x-amzn-lambda-integration-tag=test-request, Authorizati
on=*****************************************************
********************************************************
```

POST a Router manually

Use the POST/ method - click TEST, and use this as a template the body

```
{
    "customer" : "Jason",
    "ip" : "1.1.1.1",
    "os" : "VyOS",
    "hostname": "VyOS Router",
    "version": "12.2"
}
```

You should get Status 200 (OK) - that means it posted correctly to the database.

Let's post some real data to the API

Your GET request will return all the routers in the inventory. Let's add a router to the database using Ansible.

Build an Ansible Playbook

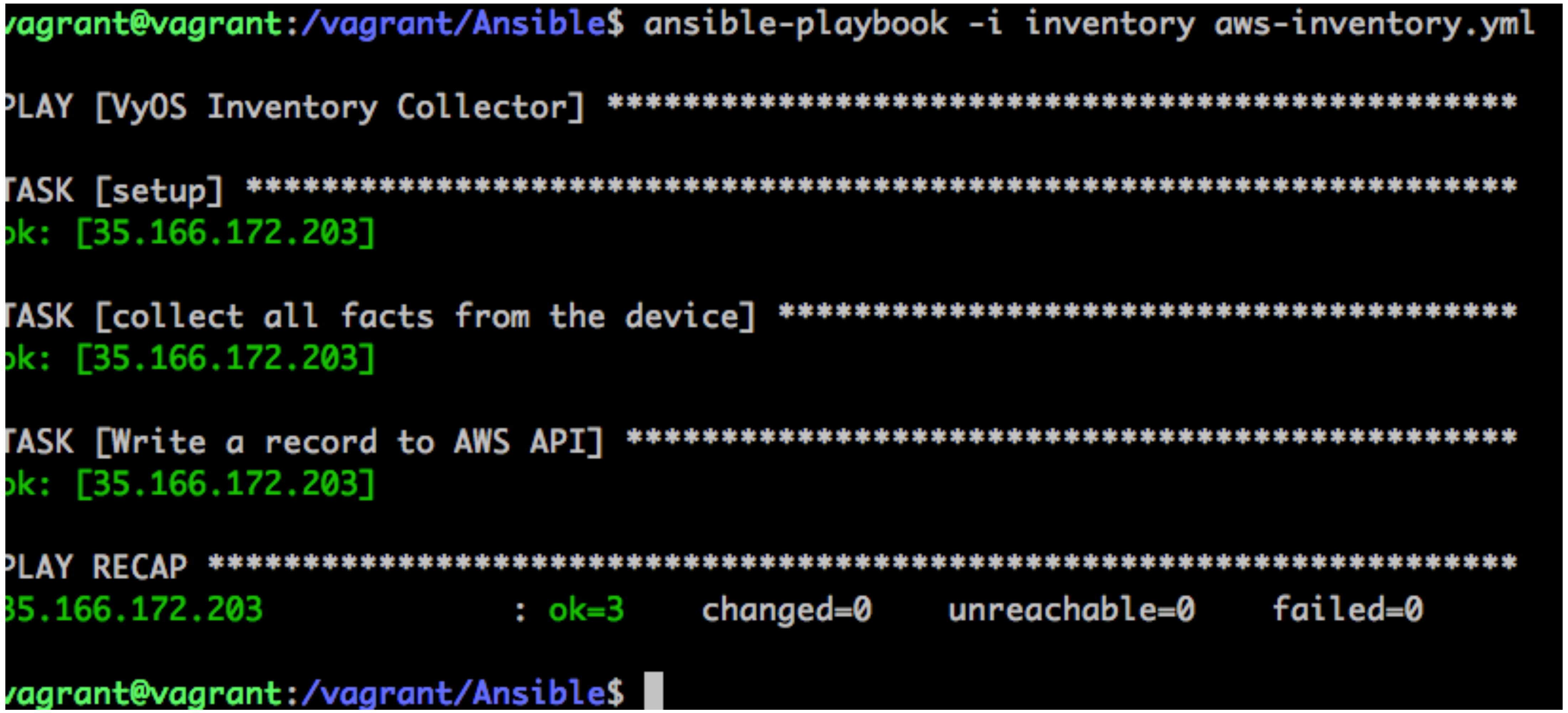
Use the template "aws-inventory.yml" under the Vagrant/Ansible folder.
We use a method called URI to POST data to a URL after collecting the inventory.
make sure to change this line in aws-inventory.yml
url: "https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers"
to **YOUR URL** reported by Serverless so that the data gets posted to YOUR API (not mine)

Ansible AWS Tasks

```
tasks:
  - name: collect all facts from the device
    vyos_facts:
      gather_subset: all
      provider: "{{ cli }}"
    register: result

  - name: Write a record to AWS API
    uri:
      url: "https://3snrpqj7tj.execute-api.us-east-1.amazonaws.com/dev/routers"
      method: POST
      HEADER_Content-Type: application/json
      body: '{
          "ip" : "{{ inventory_hostname }}",
          "version" : "{{ result.ansible_facts.ansible_net_version }}",
          "hostname" : "{{ result.ansible_facts.ansible_net_hostname  }}",
          "customer" : "{{ customername }}"
          }'
      body_format: json
      validate_certs: no
```

Run Ansible AWS inventory

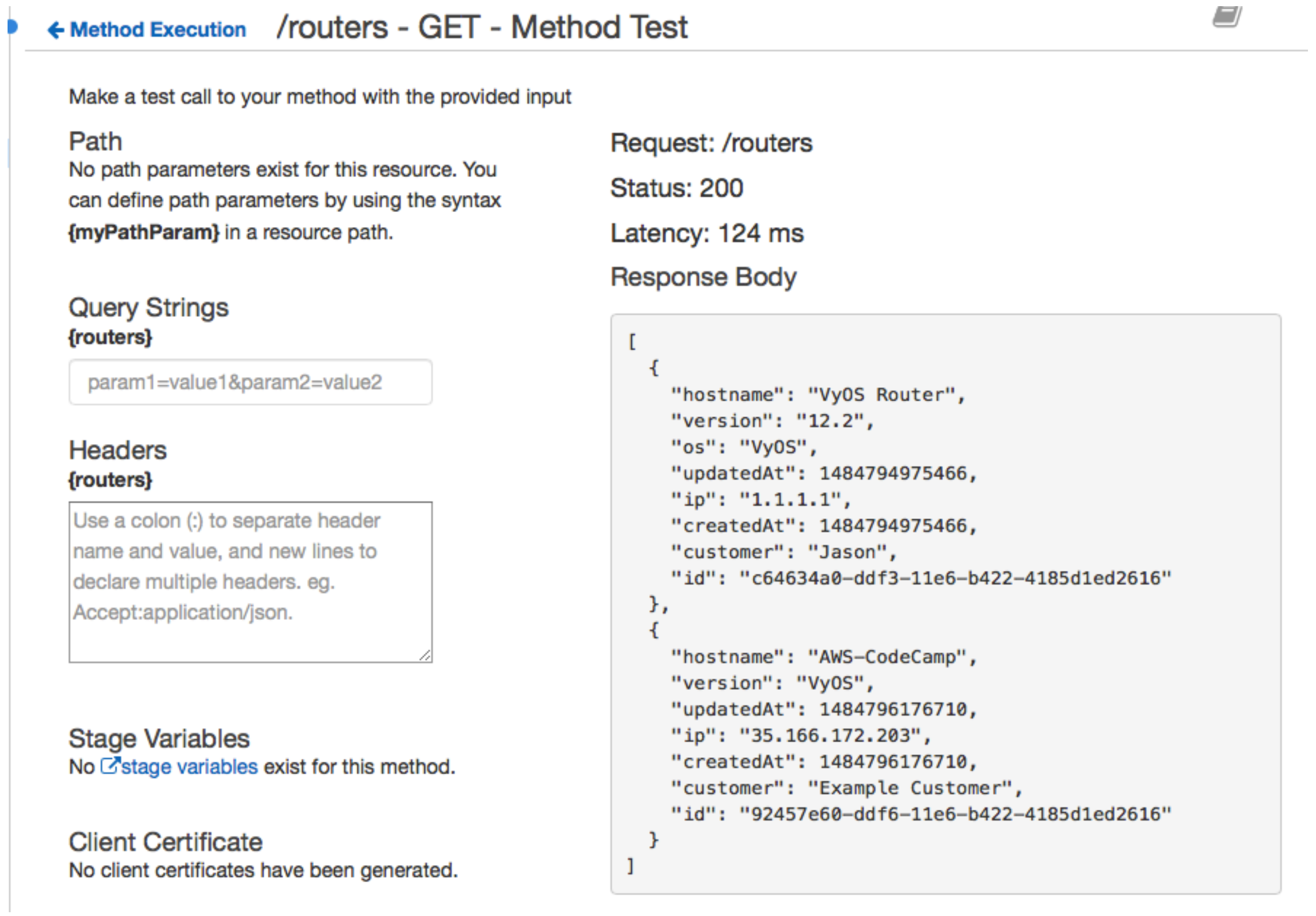
ansible-playbook -i inventory aws-inventory.yml



```
vagrant@vagrant:/vagrant/Ansible$ ansible-playbook -i inventory aws-inventory.yml

PLAY [VyOS Inventory Collector] ***********************************************

TASK [setup] ******************************************************************
ok: [35.166.172.203]

TASK [collect all facts from the device] **************************************
ok: [35.166.172.203]

TASK [Write a record to AWS API] **********************************************
ok: [35.166.172.203]

PLAY RECAP ********************************************************************
35.166.172.203             : ok=3    changed=0    unreachable=0    failed=0

vagrant@vagrant:/vagrant/Ansible$
```

Query our API/database

On the right we see both entries, our custom posted entry, and the Ansible entry.



/routers - GET - Method Test

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Query Strings
{routers}
param1=value1&param2=value2

Headers
{routers}
Use a colon (:) to separate header name and value, and new lines to declare multiple headers. eg. Accept:application/json.

Stage Variables
No stage variables exist for this method.

Client Certificate
No client certificates have been generated.

Request: /routers
Status: 200
Latency: 124 ms
Response Body

```
[
  {
    "hostname": "VyOS Router",
    "version": "12.2",
    "os": "VyOS",
    "updatedAt": 1484794975466,
    "ip": "1.1.1.1",
    "createdAt": 1484794975466,
    "customer": "Jason",
    "id": "c64634a0-ddf3-11e6-b422-4185d1ed2616"
  },
  {
    "hostname": "AWS-CodeCamp",
    "version": "VyOS",
    "updatedAt": 1484796176710,
    "ip": "35.166.172.203",
    "createdAt": 1484796176710,
    "customer": "Example Customer",
    "id": "92457e60-ddf6-11e6-b422-4185d1ed2616"
  }
]
```

Caution if you run Ansible more than once, it will upload duplicates.
If you feel like rewriting some code to prevent that - go for it.

End of Lab

Thanks!