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lab title

Bulletproof HTML5 Websites with AWS in a Nutshell

V1.49



**Course title** 

BackSpace Academy Nutshell Series



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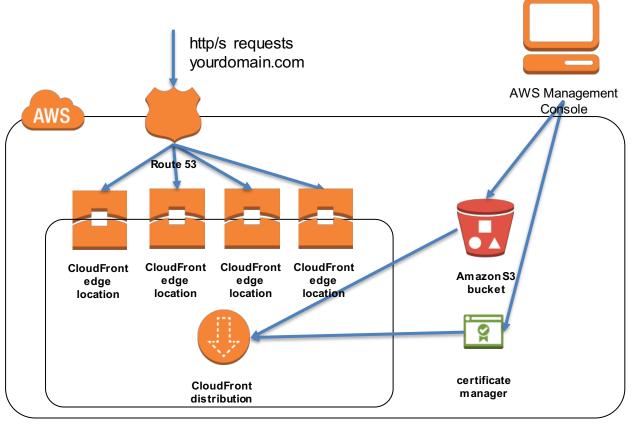
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### About the Lab

# Please note that not all AWS services are supported in all regions. Please use the US-East-1 (North Virginia) region for this lab.

These lab notes are to support the instructional videos on Bulletproof HTML5 Websites with AWS in a Nutshell Course.

This is a typical use case for S3 and CloudFront to deliver highly available static websites that can handle heavy traffic.



AWS cloud

Please note that AWS services change on a weekly basis and it is extremely important you check the version number on this document to ensure you have the lastest version with any updates or corrections.

### Purchasing a Custom Domain Name

In this section, we will purchase a domain name through AWS Route 53.

\*Please note this process will involve paying for a domain name with AWS.

Although not recommended, if you would like to use another domain registrar instructions are detailed later under *Routing Traffic with a Domain Name from another Registrar*.

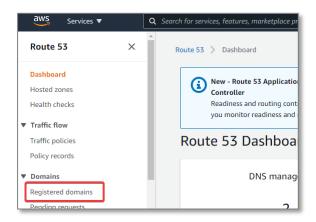
Our first task is to purchase a domain name for our website.

This part involves purchasing a domain through the Route 53 service.

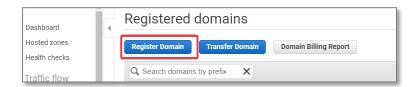
From the management console search Route 53.



Click on Registered Domains from the menu



Click on Register Domain



Type in the domain name you would like and click *Check* to see if it is available.



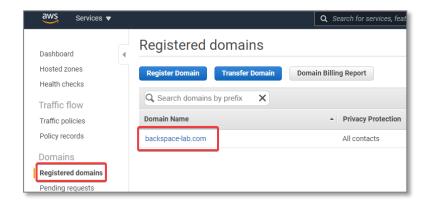
If it is available click "add to cart"

Scroll down and click on "Continue"

Complete the process making sure you use a valid email for the domain registration otherwise the process will fail.

You should receive an email with a link to verify your email. About 30 minutes after your email address has been verified you should receive an email stating the domain was successfully registered with Route 53.

After the domain has been successfully registered you will see it in the "Registered domains"



# Creating an S3 Bucket and Uploading our Website

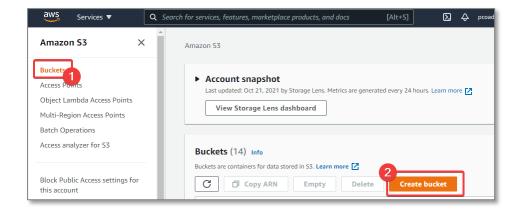
In this section we will create an S3 bucket and upload our HTML5 website.

Create an S3 Bucket

From the management console search S3.

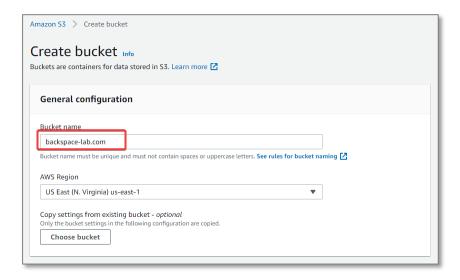


Click on Buckets -> Create Bucket



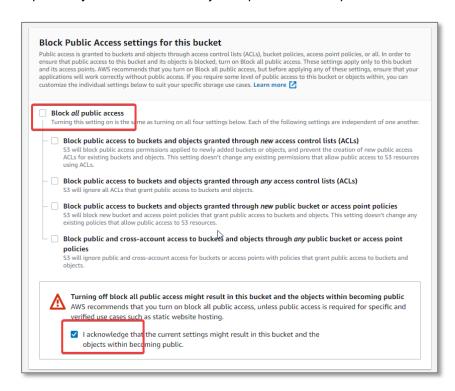
Enter your custom domain name.

Select US East (N. Virginia).



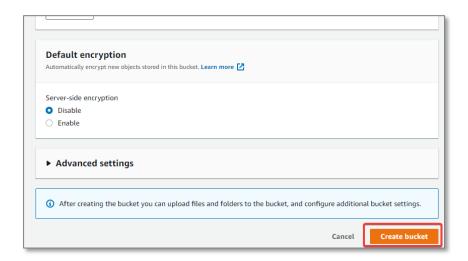
### Uncheck Block all public access

\*Without public access our website cannot be seen by the public. We can still restrict access to any objects as required. By default individual objects uploaded will be private.



Leave the rest as defaults.

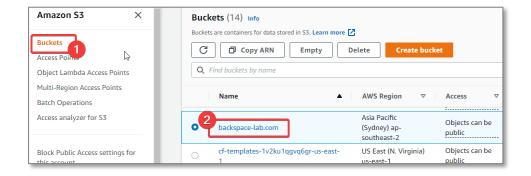
Scroll down and click Create bucket



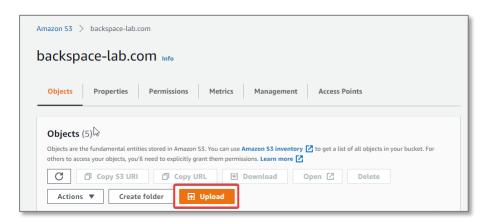
### **Upload Website Objects**

Now it is time to upload our website objects. You can find free website templates at <a href="https://html5up.net/">https://html5up.net/</a>
Make sure that you unzip the file before attempting to upload the files.

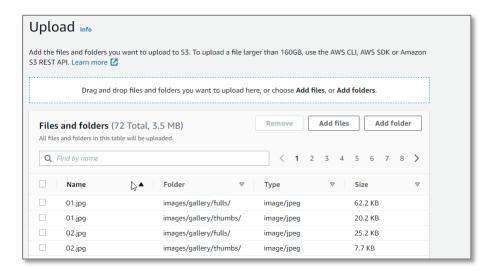
Click on the bucket (yourdomain.com)



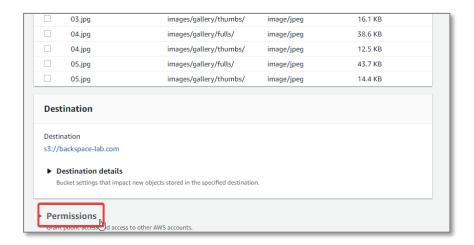
### Click Upload



You want to upload entire directories, including contents, do not Click *Add Files*. Open a Windows File Explorer window and drag the entire contents from File Explorer and drop on top of the Upload form.



### Expand Permissions



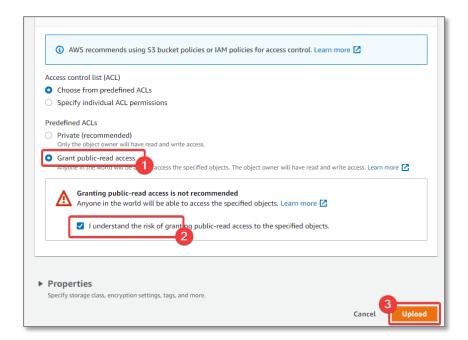
Scroll down to Access Control List (ACL)

Select Grant public - read access

Click the understand checkbox

Leave rest as defaults

Click Upload



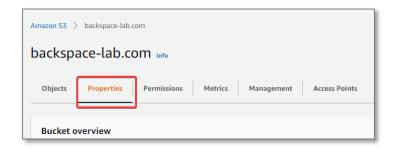
Your files will now be uploading.



## Enabling S3 Website Hosting

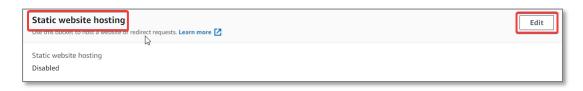
In this section we will enable website hosting for our root domain (yourdomain.com) and also redirect requests to the www subdomain (www.yourdomain.com) to our root domain.

#### Select Properties



Scroll down to Static Website Hosting

#### Click Edit

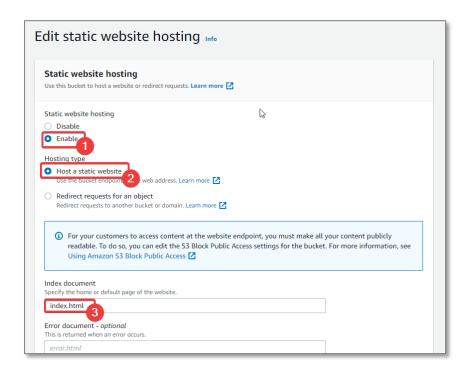


Now Select Use this bucket to host a website

Enter the Index Document (required)

Enter Error Document if available or else just leave empty

Click Save changes



If you scroll down to Static Webstite Hosting you will see the public endpoint for the S3 website.

Endpoint: http://yourdomain.com.s3-website-us-east-1.amazonaws.com

Click on the endpoint to see your website in your browser.



### **Troubleshooting**

If you get either of the following message your object permissions are not set to public.

# Code: AccessDenied Message: Access Denied RequestId: 3D615DF91F90446F HostId: VGBfqelVfAp1LOs/1QsZzYCa3/V11o75WDkmFpJDPLrJyvqZoqYuRddGnZNaF+QUiKNNtA5nGDk=

```
This XML file does not appear to have any style information associated with it. The document tree is shown below.

**VListBucketResult xmlns="http://s3.amazonaws.com/doc/2006-03-01/">
**(Name>backspaceacademy.com</Name>

**(Prefix/)*

**(Marker/)*

**(Marker/)*

**(Marker/)*

**(Markeys)1000</Markeys)*

**(IstTruncated)**(IstTruncated)**

**(Contents)*

**(Rey)*404.html</Rey>

**(LastModified)*(ETag)**(ETag)**

**(Size)*29422</Size)*

**(Storage(lass)*STANDARD</Storage(lass)*

**(Contents)**

**(Contents)*

**(Content
```

If you find svg images are not showing on your website it is most probably incorrect header information. Upload the specific files again but add Content-type "image/svg+xml" in the Metadata section (you need to expand *Additional upload options* and scroll down to see it).

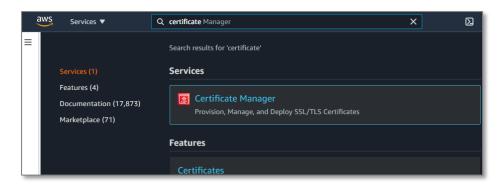


# Creating an SSL Certificate with AWS Certificate Manager

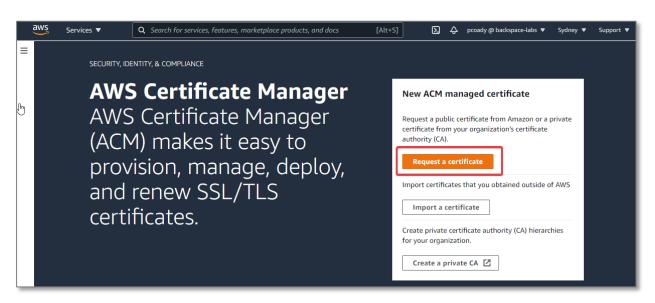
In this section we will use the AWS Certificate Manager to create an SSL certificate we can use to enable HTTPS with CloudFront.

Please note that to require HTTPS between viewers and CloudFront, you must change the AWS region to US East (N. Virginia) before you request or import a certificate.

From the management console search Certificate Manager.

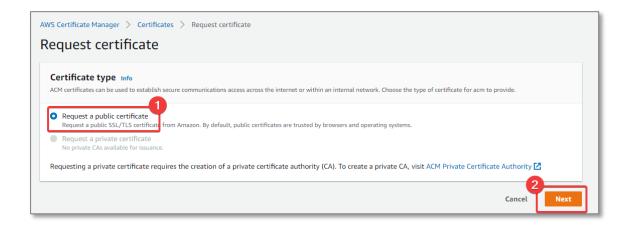


Click Request a Certificate



Select Request a public certificate

Click Next



Enter the root domain (yourdomain.com)

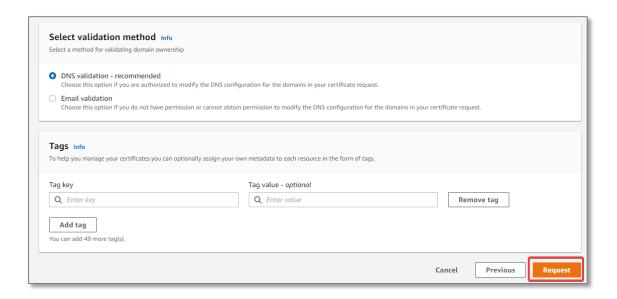
Click Add another name to this certificate

Enter the root domain prefixed with \*. (\*.yourdomain.com)

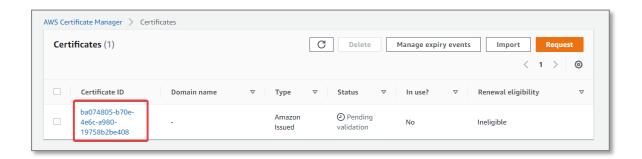


Leave default settings

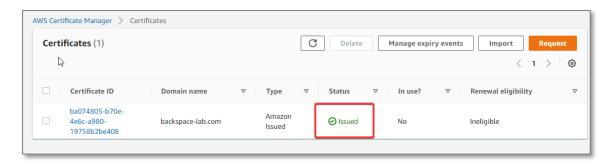
Click Request



After a about a minute you will see status Pending validation



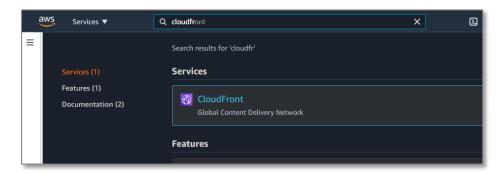
Wait about 15 minutes then click the refresh icon to check if it has been issued successfully.



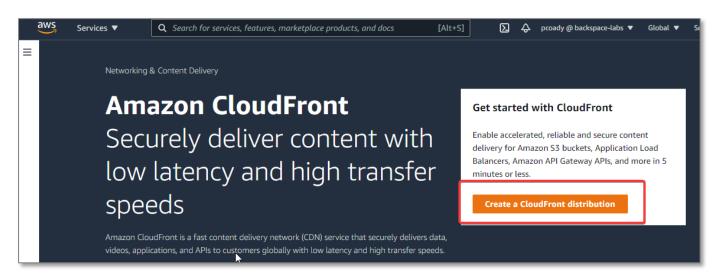
# Creating a CloudFront Distribution

In this section we will use the AWS CloudFront Content Delivery Network (CDN) to cache our site to edge locations across the Globe.

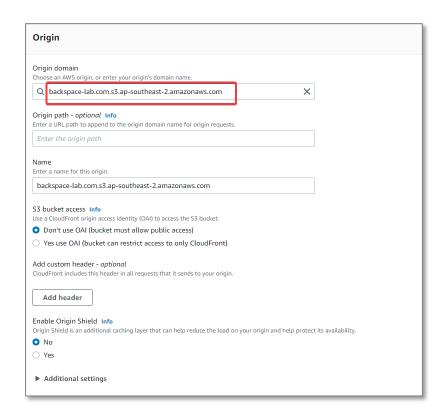
From the management console search CloudFront



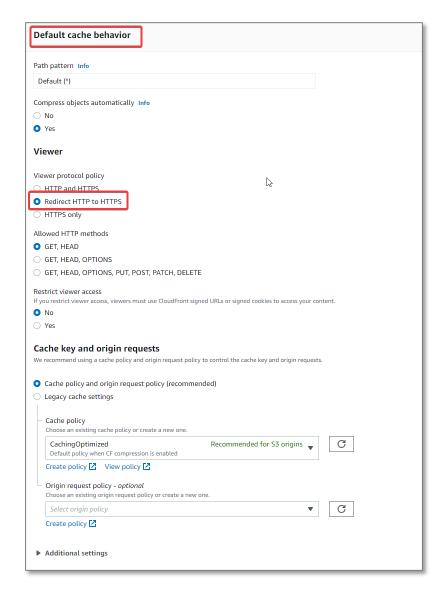
Click on Create a CloudFront Distribution



In Origin Settings select your s3 bucket as the Origin Domain Name



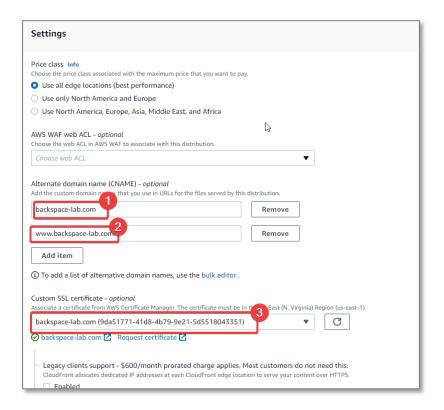
Set Viewer Protocol Policy to Redirect HTTP to HTTPS



Under Settings enter your domain name and subdomains (www.yourdomain.com) into Alternate Domain Names (CNAMEs)

Under Distribution Settings enter/select your custom SSL certificate

If the Custom SSL option is not available your certificate is either not issued yet or information has not propagated to CloudFront service yet. Cancel the distribution and try again after a few minutes.

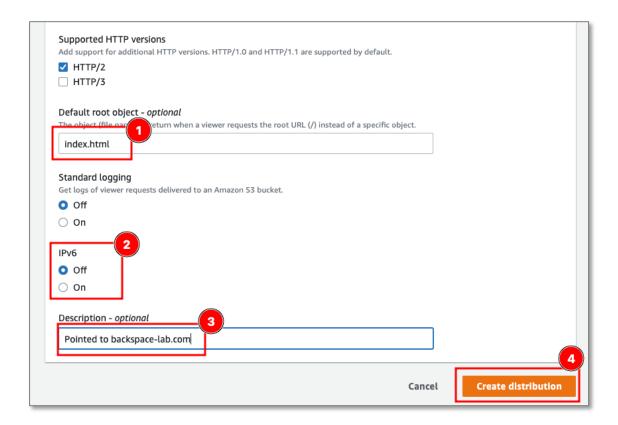


Under Default root object enter the index.html file for your website

Set IPv6 to Off

Put in a comment so that you easily identify the distribution.

Click Create Distribution



The Status of the distribution will change when it has been distributed to the edge locations.

### Requiring HTTPS for Communication Between CloudFront and Your Amazon S3 Origin

If you are creating a secure site you can also require HTTPS for communication between your S3 bucket and CloudFront. This is achieved by disabling website hosting for the S3 bucket. It will then only be possible to view the website through CloudFront.

Go to the S3 management console and select the bucket.

Select the Properties tab

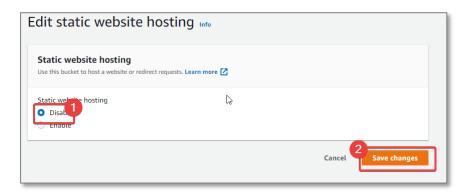


Scroll down to Static website hosting

Click Edit



Select Disable website hosting and then click Save



### Invalidating a CloudFront Distribution

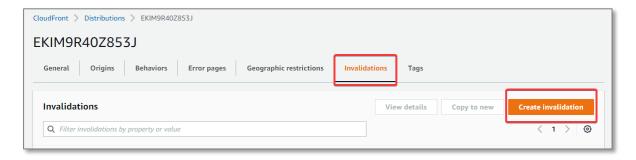
If you need to change your website and update your CloudFront distribution you can force CloudFront to fetch and update the distribution using invalidations.

To invalidate/update a CloudFront distribution:

Click on the distribution from the list of distributions

Click on the Invalidations tab

Click Create Invalidation



Enter the object path to the file you want to invalidate/update (e.g. /index.html) or use a wildcard symbol to invalidate all the files (e.g. /\* )

Click Create Invalidation

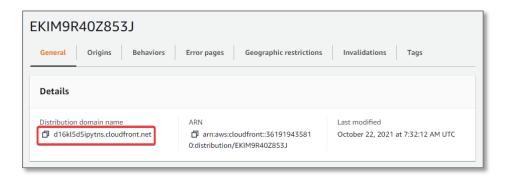


This will take some time to complete.

### Routing Traffic with AWS Route 53

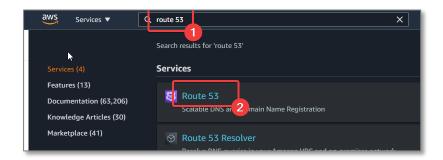
In this section we will direct all requests to our domain name and www subdomain to CloudFront using Route 53 Domain Name Service (DNS).

Go back to the CloudFront Distribution page and copy the distribution domain name



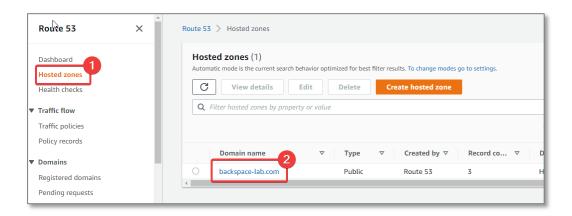
Now go back to the Route 53 Management Console:

Click on the services menu and select Route 53.

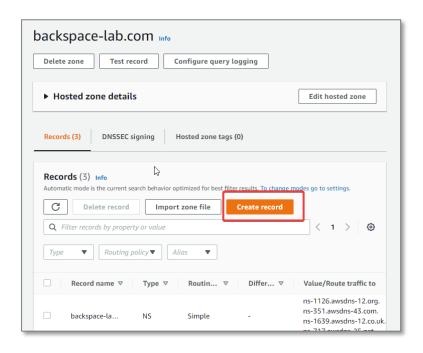


Click on Hosted Zones

Click on the hosted zone created by the Route 53 Registrar



### Click on Create Record



Leave Record Name empty

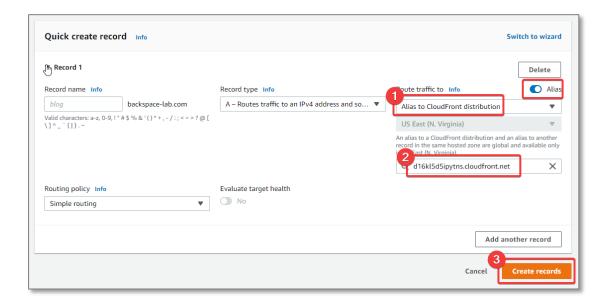
Select A-IPv4 address as Type

Check Alias: Yes

Select Alias to CloudFront distribution

Select your CloudFront distribution domain name

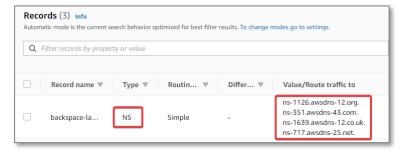
Click Create records



### Routing Traffic with a Domain Name from another Registrar

If you have a domain name from another registrar (e.g. GoDaddy) you can still direct traffic for this domain to AWS by replacing the NS records. That way all DNS requests will be directed to AWS name servers. The process is as follows:

- 1. Create a Route53 hosted zone for the domain
- 2. Copy the NS records for the hosted zone



- 3. Replace the NS records in your registrars DNS service with the NS records from your Route53 hosted zone
- 4. Add the A record to your Route53 hosted zone as detailed previously above.

### Route Requests for www Subdomain

Click on Create Record

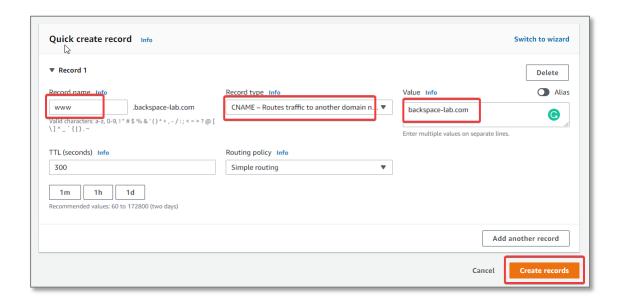
Enter www for Record Name

Select CNAME as Type

Select "No" for Alias.

Enter your domain name (or the CloudFront domain, either will work) for the www subdomain as Value (without the http:// at the start)

Click on Create Records



After some time the changes will be propagated to the Internet and you will be able to navigate to your domain name in your browser and see your website.

### **Checking DNS Propagation Status**

The Route 53 entries detailed above will take a while to propagate across the Internet. This could be anywhere from a couple of minutes to an hour. You can check the status of DNS propagation using the following site:

### **Global DNS Propagation Checker**

After the records have successfully propagated you will be able to navigate to your domain name and see your website.

### Deleting the Website

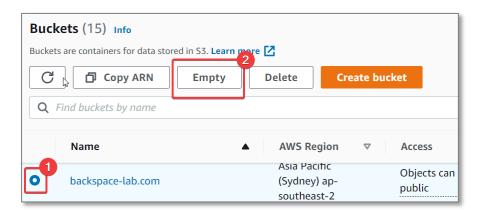
In this section we will show you how to delete all the resources if you no longer need the website.

Delete Bucket

Go to the S3 console

Select the bucket

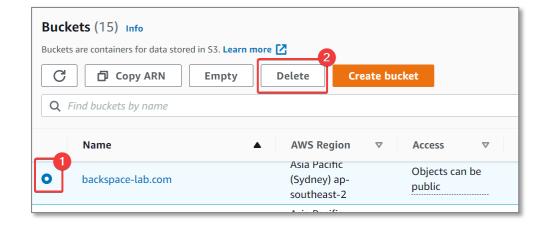
Click Empty



Click Exit

Select the bucket

Click Delete

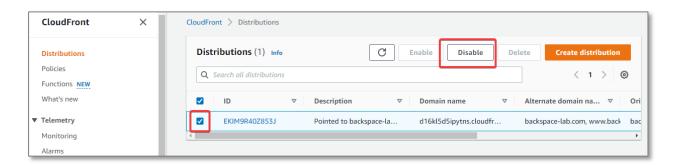


### **Delete CloudFront Distribution**

Go to the CloudFront console

Select CloudFront Distribution

### Click Disable



Wait for status to change to disabled

Click Delete