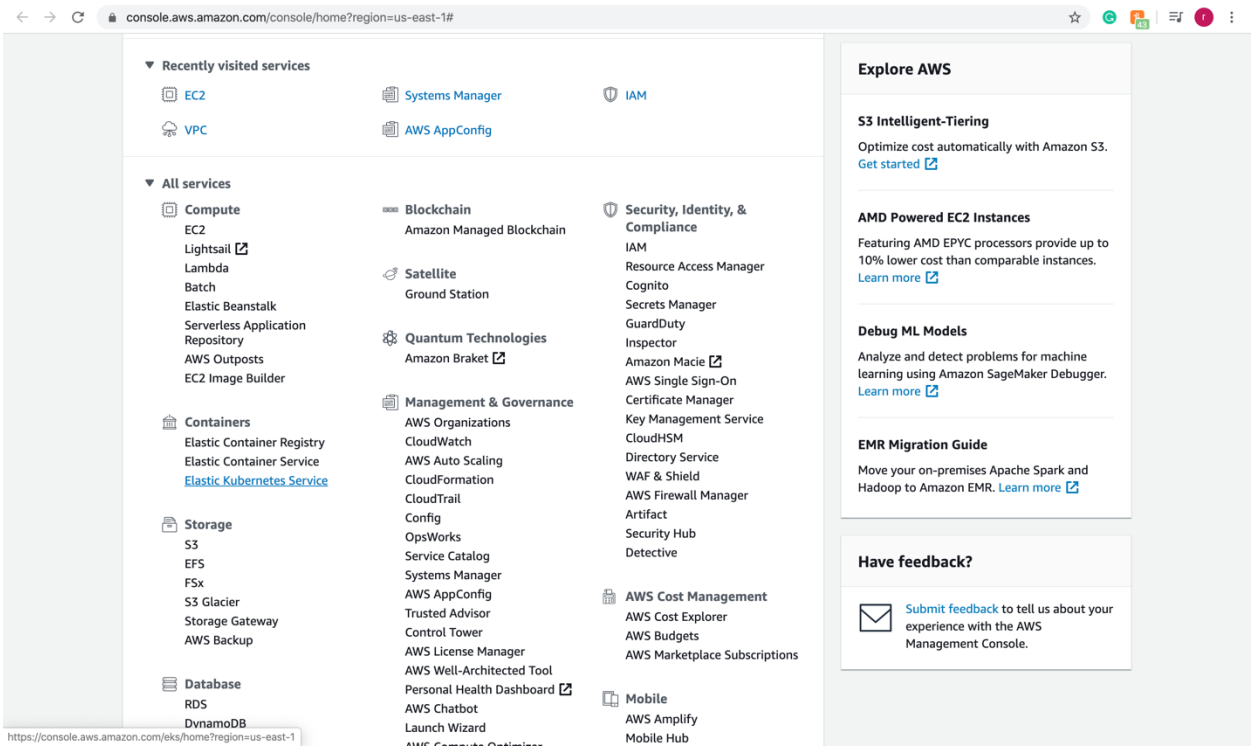
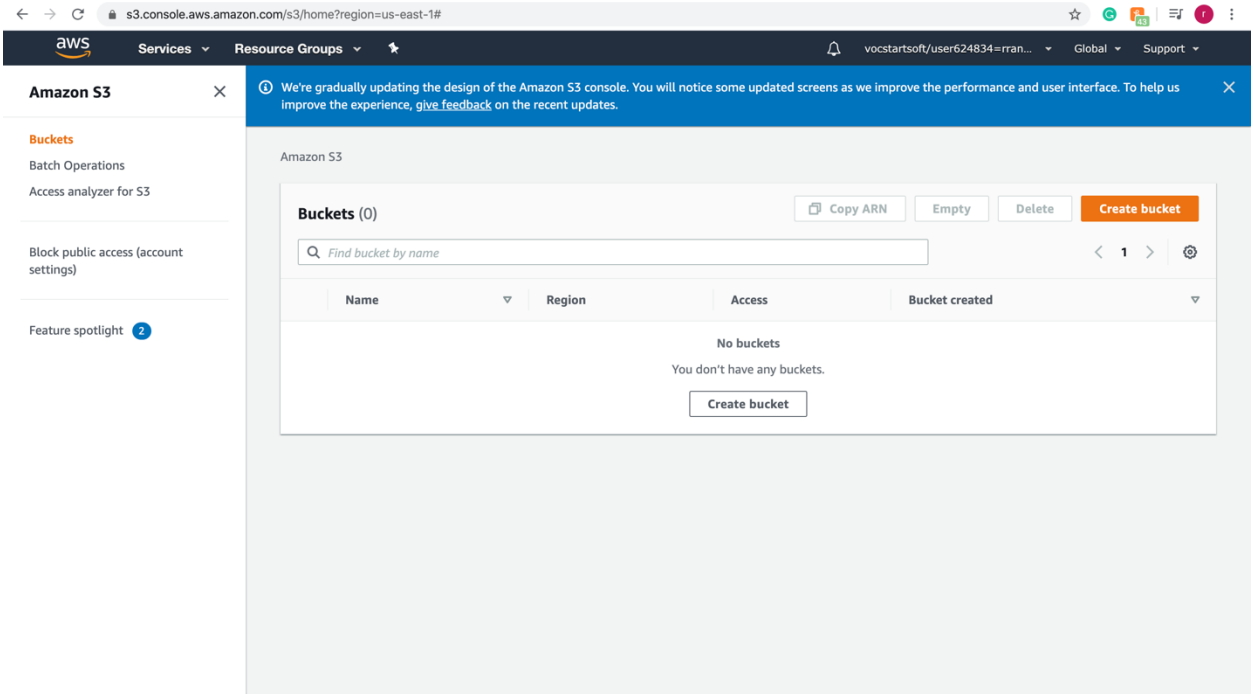
1) Creating S3 bucket:

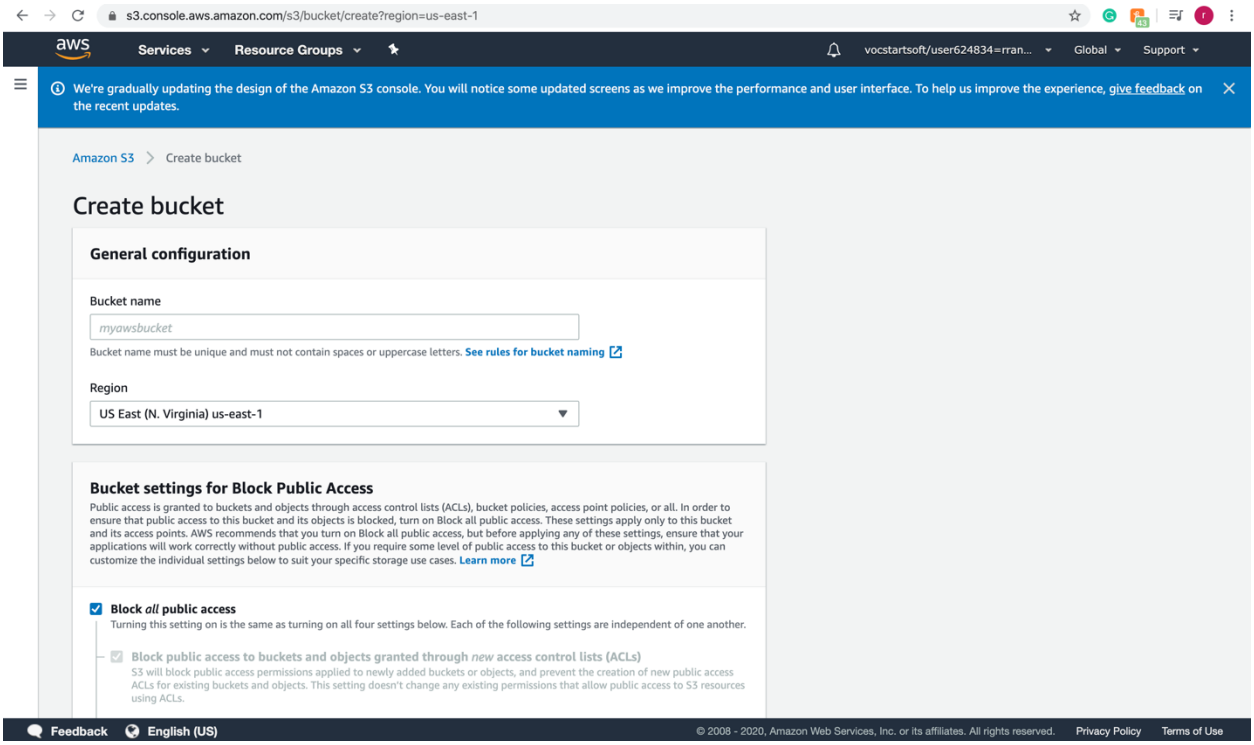
To create S3 bucket log into your AWS account and from the services dropdown click into the S3 as seen below is in the storage section.



- Click on the create bucket well to create a S3 bucket.

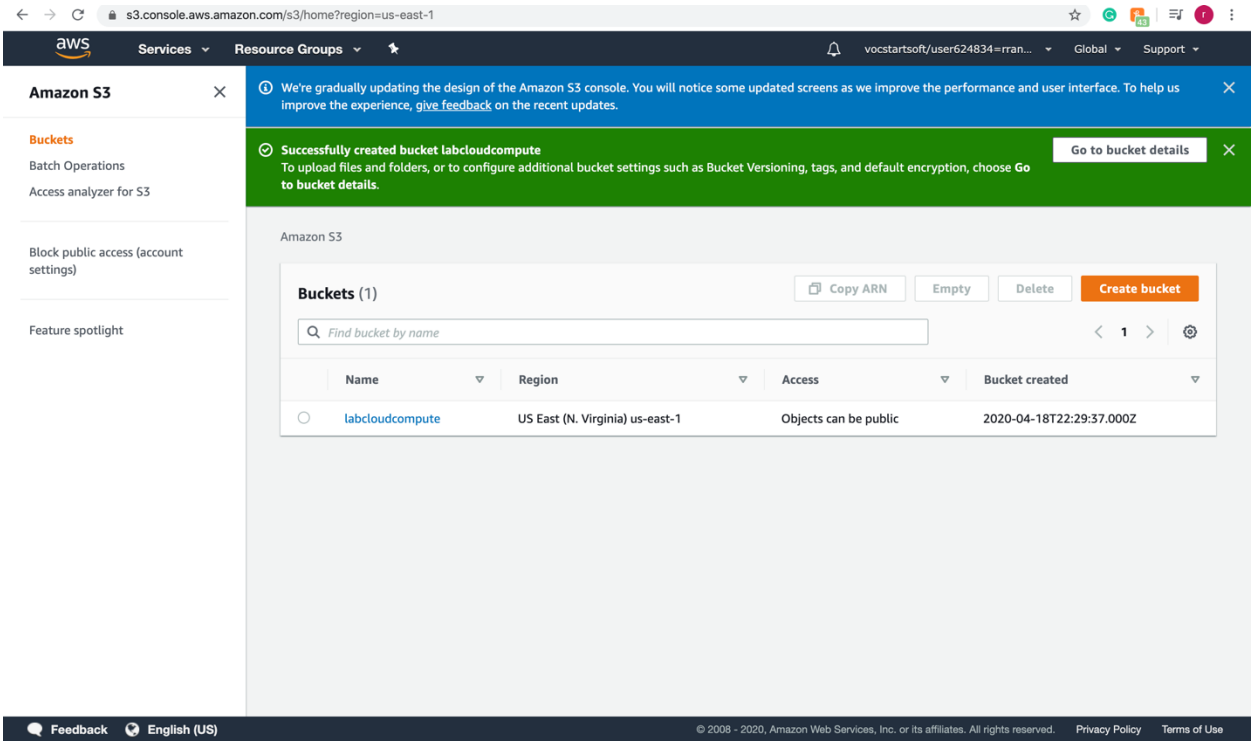


- Bucket name must be unique, and you cannot create it unless it is and meets all the requirements which is mentioned. Also make sure to note region as buckets made in specific region and are accessible globally.



-We can change the bucket setting to public or private, it is suggested to make the bucket not public but for the sake of this experiment, I have changed the permission to public in permission tab.

-With that we have successfully created an S3 bucket.


s3.console.aws.amazon.com/s3/home?region=us-east-1
Services
Resource Groups
vocstartsoft/user624834=rran...
Global
Support
Amazon S3
Buckets
Batch Operations
Access analyzer for S3
Block public access (account settings)
Feature spotlight
We're gradually updating the design of the Amazon S3 console. You will notice some updated screens as we improve the performance and user interface. To help us improve the experience, give feedback on the recent updates.
Successfully created bucket labcloudcompute
To upload files and folders, or to configure additional bucket settings such as Bucket Versioning, tags, and default encryption, choose Go to bucket details.
Go to bucket details
Amazon S3
Buckets (1)
Copy ARN
Empty
Delete
Create bucket
Find bucket by name
Name
Region
Access
Bucket created
labcloudcompute
US East (N. Virginia) us-east-1
Objects can be public
2020-04-18T22:29:37.000Z
Feedback
English (US)
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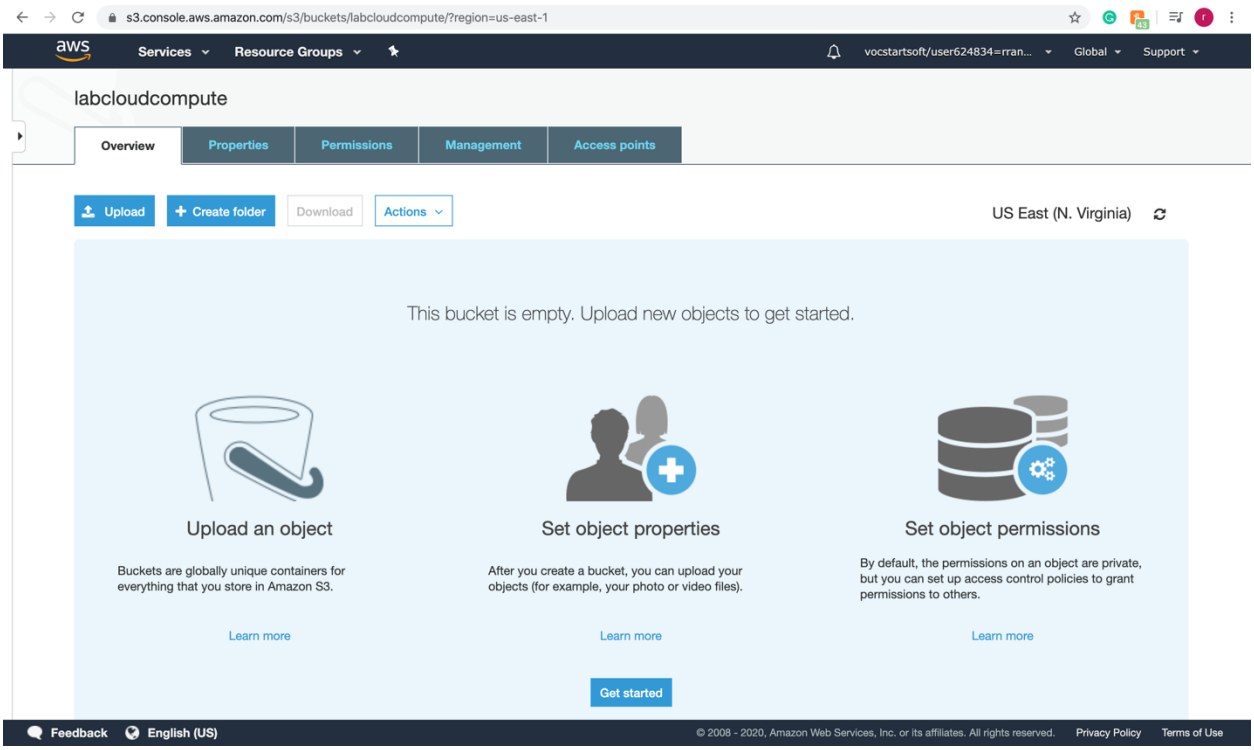
Privacy Policy
Terms of Use


s3.console.aws.amazon.com/s3/buckets/labcloudcompute/?region=us-east-1
Services
Resource Groups
vocstartsoft/user624834=rran...
Global
Support
labcloudcompute
Overview
Properties
Permissions
Management
Access points
Upload
Create folder
Download
Actions
US East (N. Virginia)
This bucket is empty. Upload new objects to get started.
Upload an object
Buckets are globally unique containers for everything that you store in Amazon S3.
Learn more
Set object properties
After you create a bucket, you can upload your objects (for example, your photo or video files).
Learn more
Set object permissions
By default, the permissions on an object are private, but you can set up access control policies to grant permissions to others.
Learn more
Get started
Feedback
English (US)
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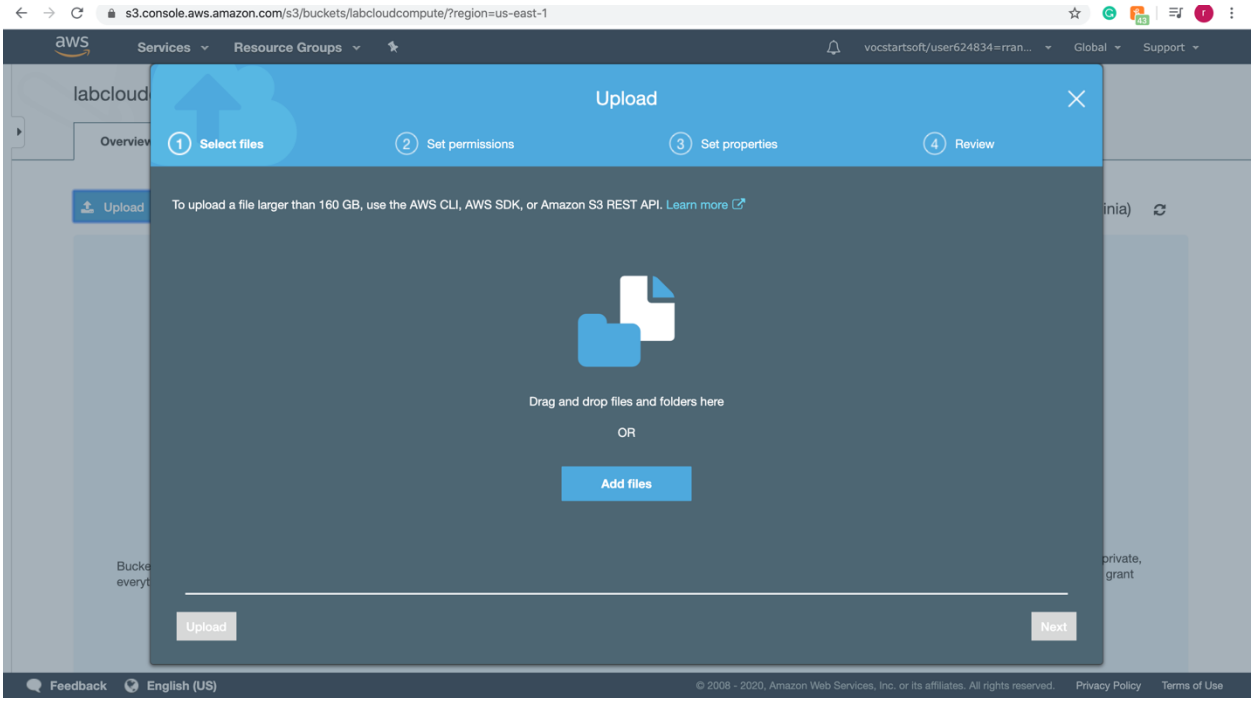
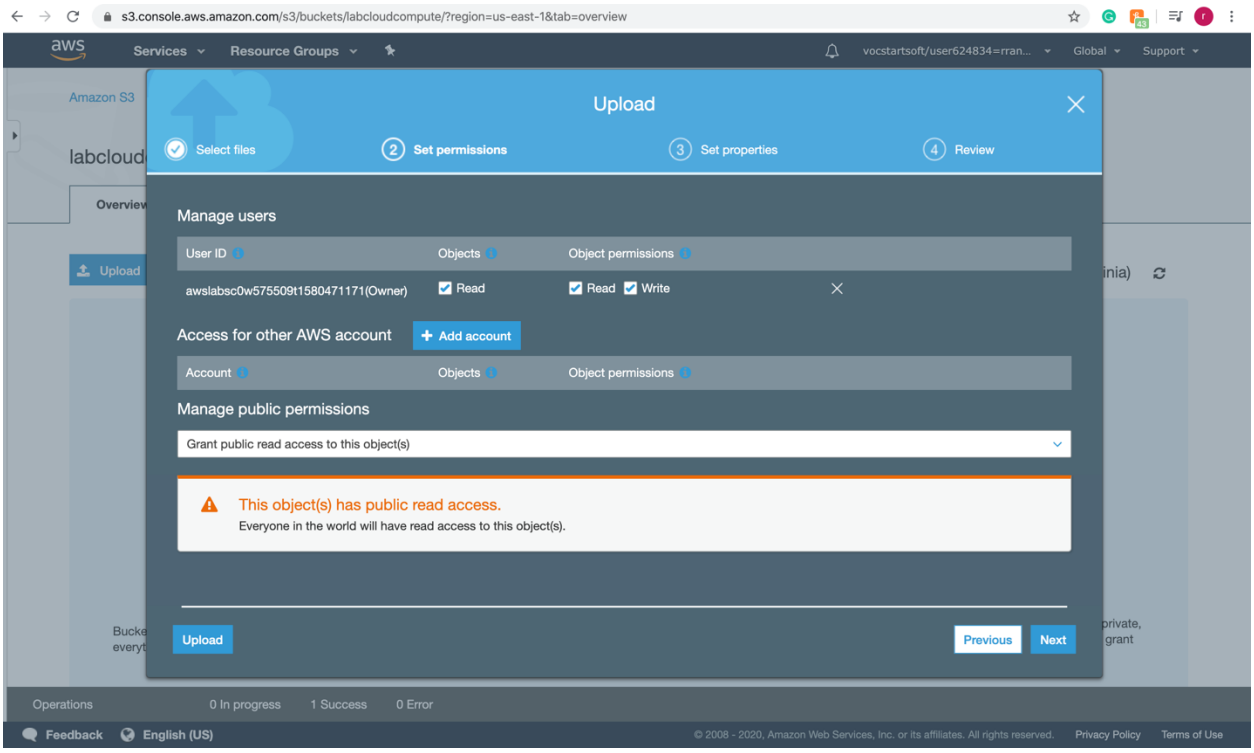
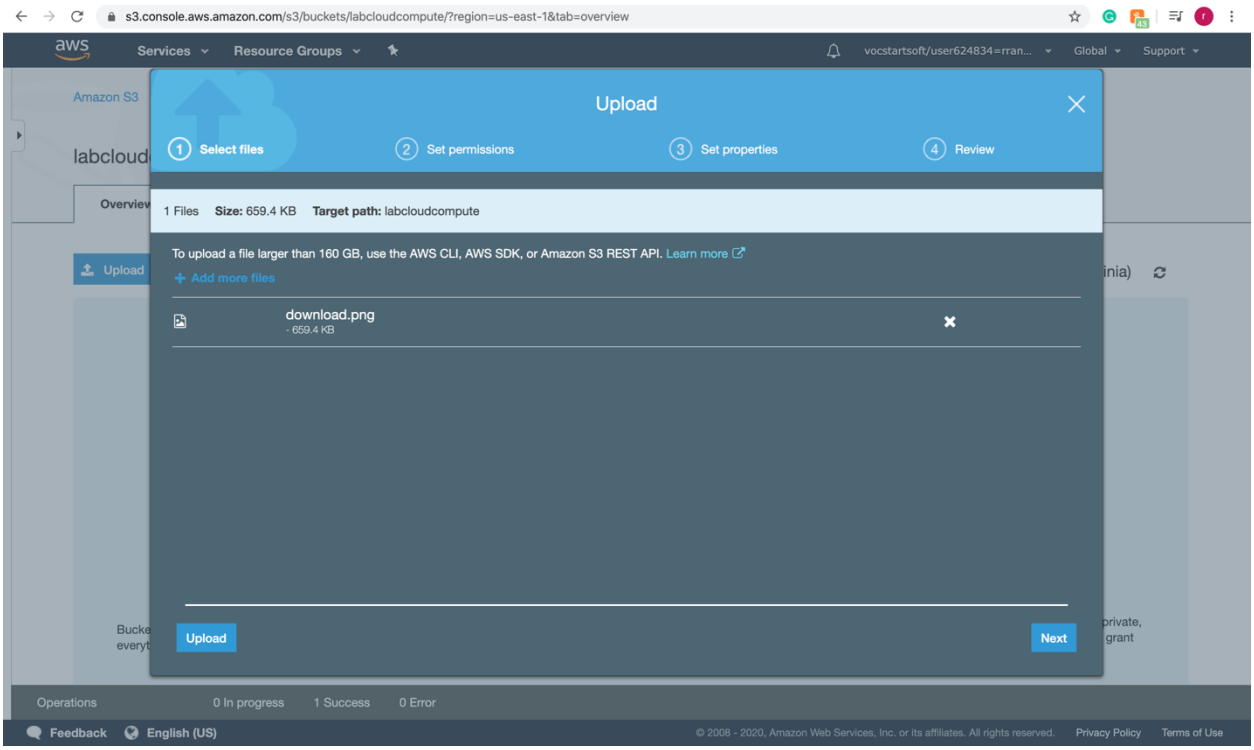
Privacy Policy
Terms of Use

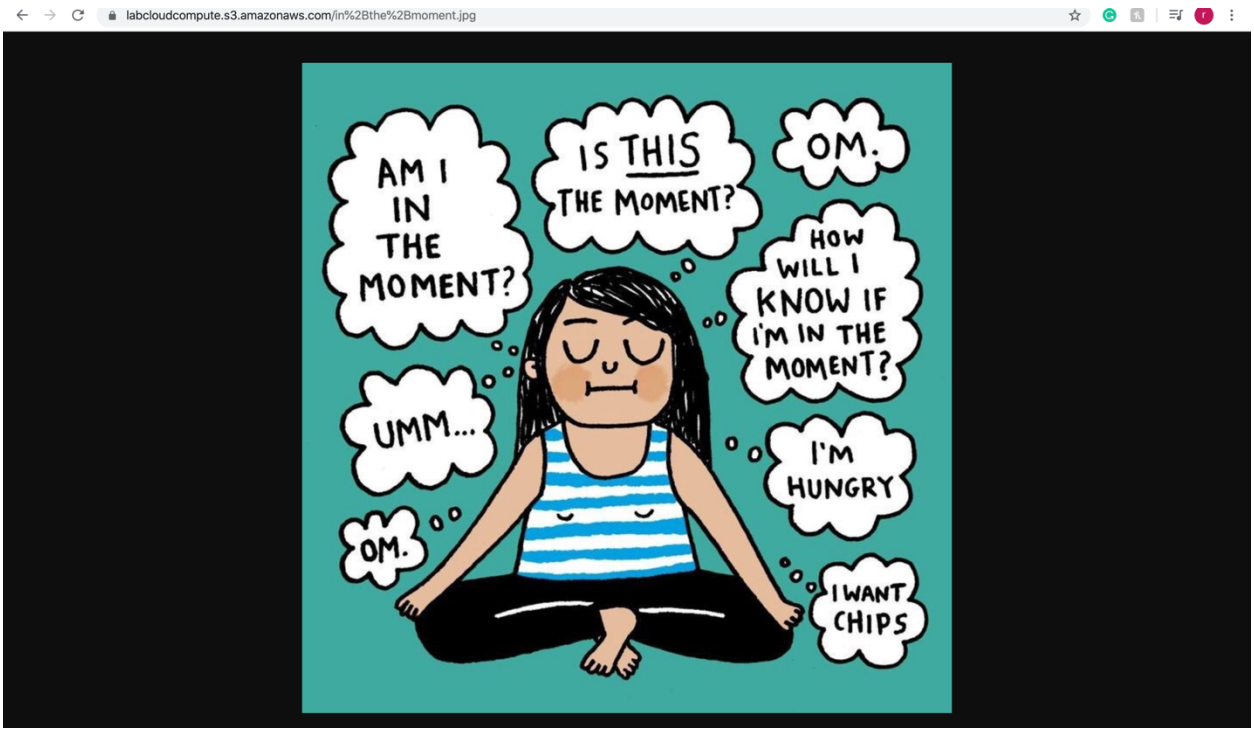




- In the created S3 uploading image and making it public.

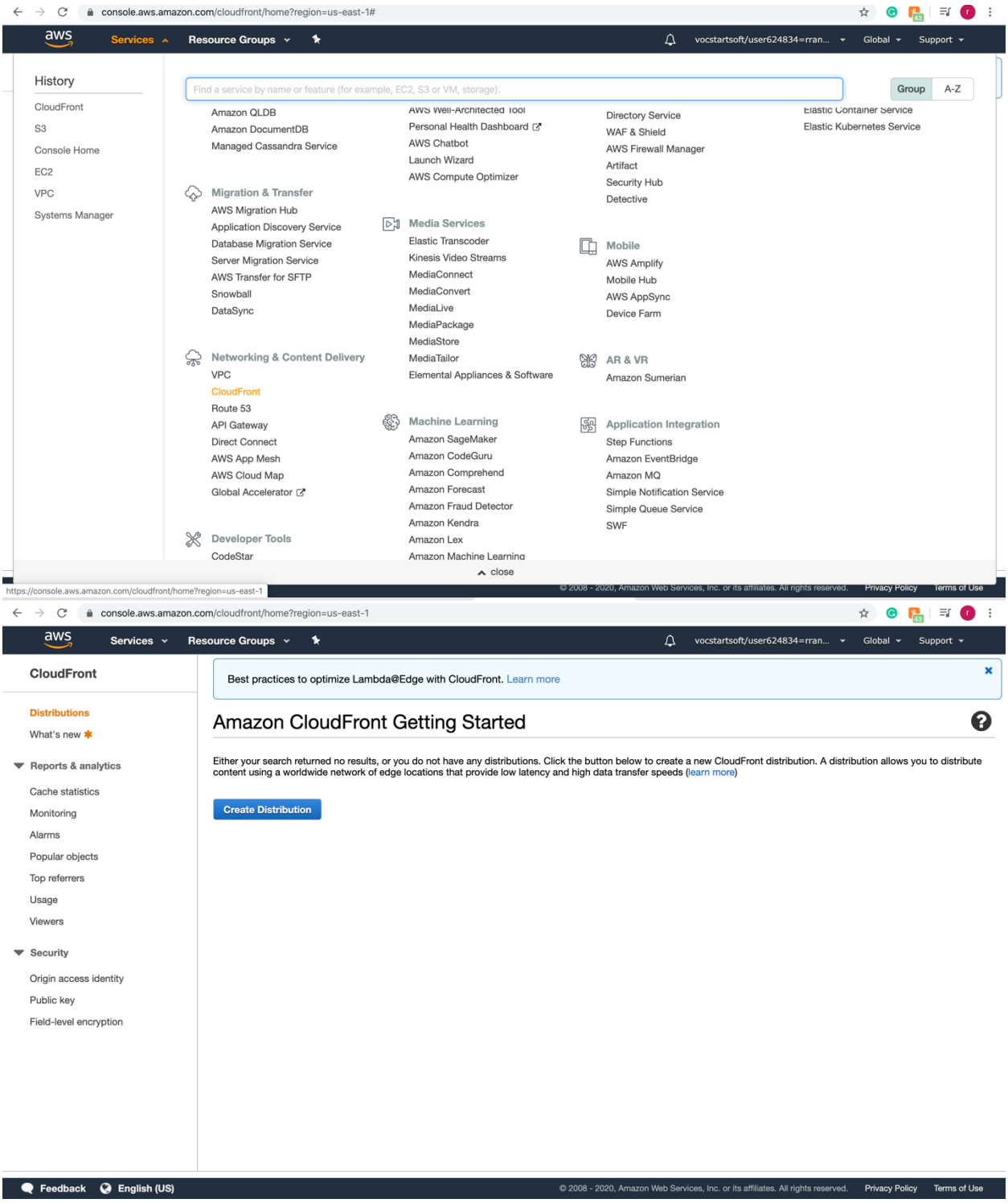


- Clicking the object URL. We have successfully accessed.

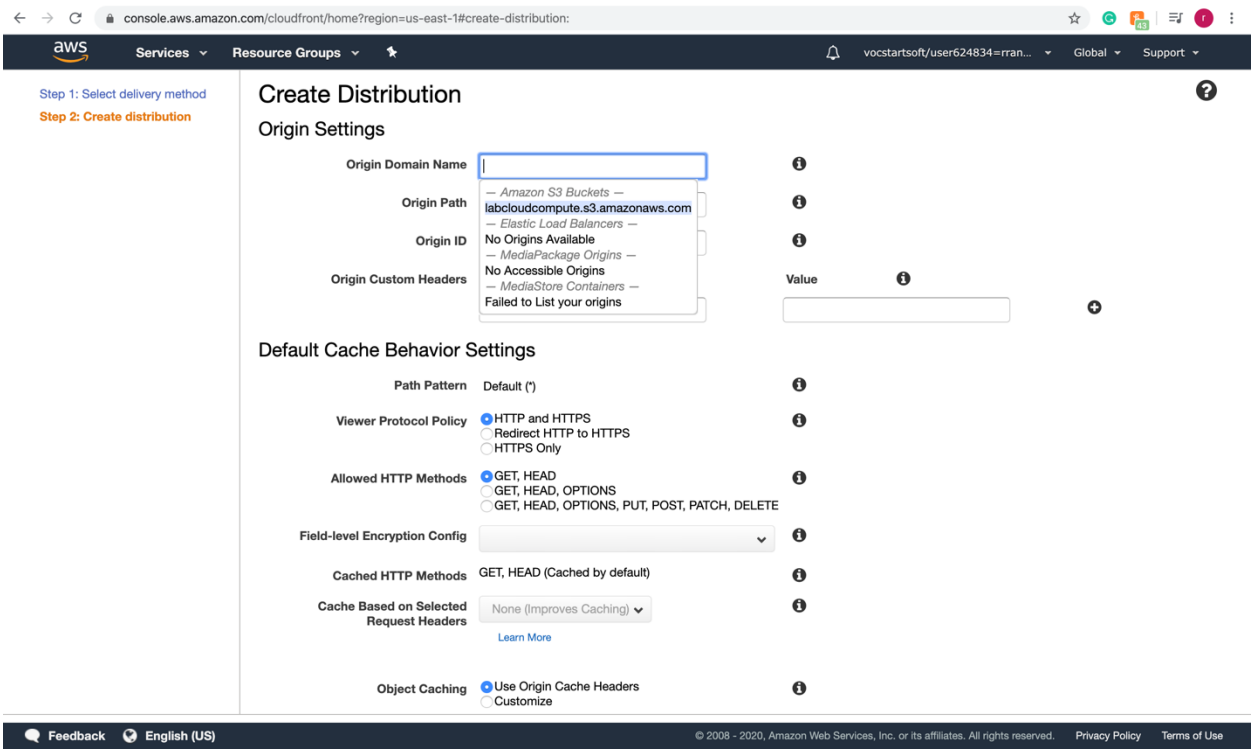


2) Creating Web Distribution in Cloud Front:

- To create click on CloudFront as shown below.



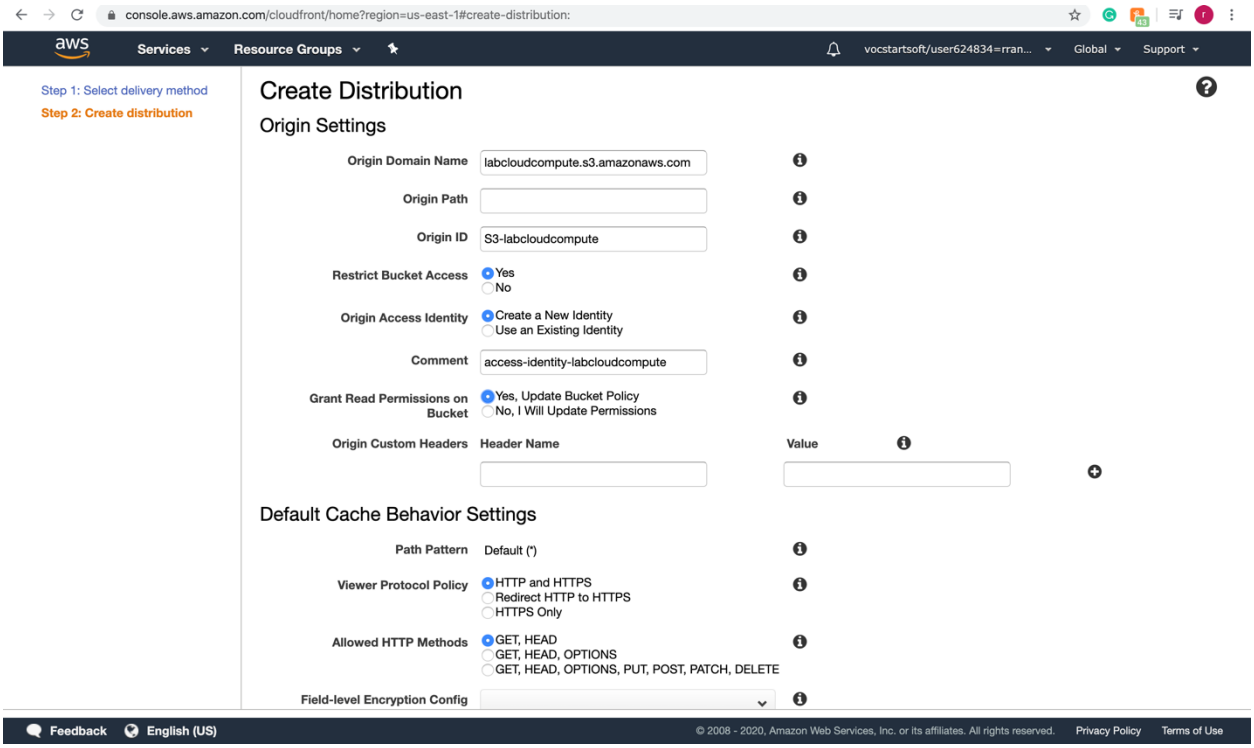
-

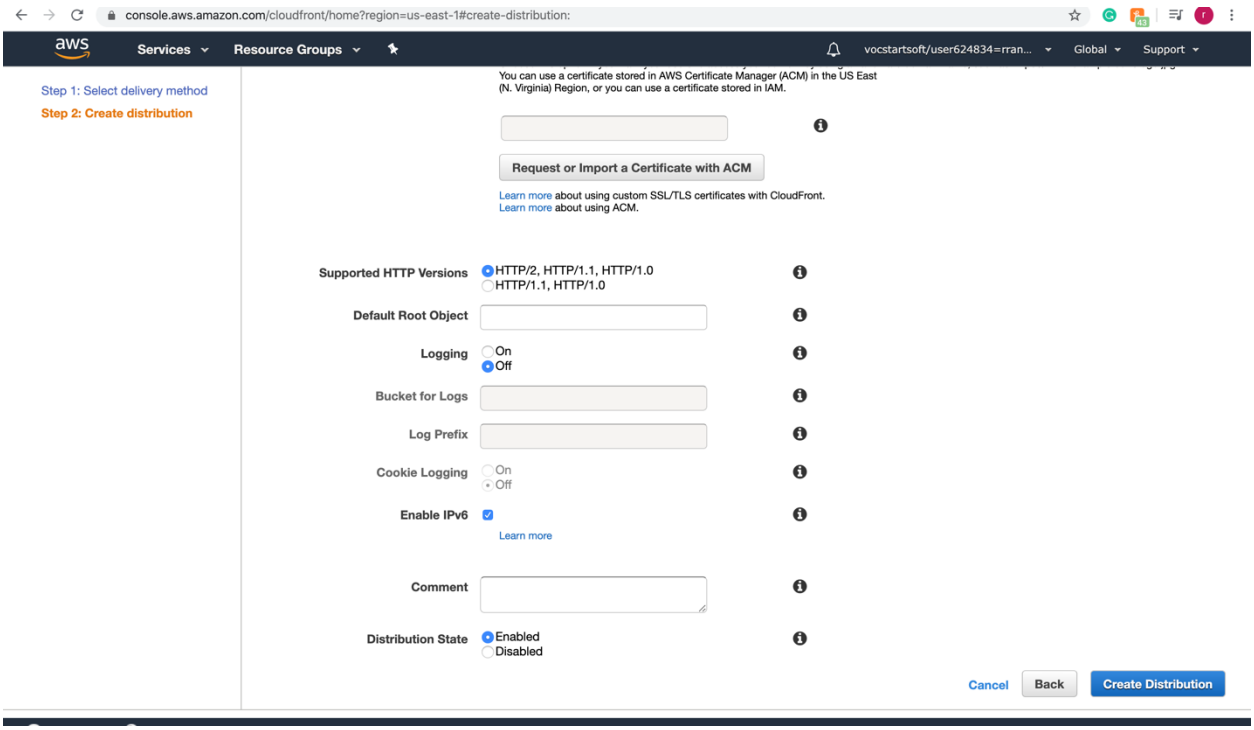


-When **Creating Distribution** there are various settings. The origin domain name we specified the S3 domain that was created, and it should show in the dropdown if we created the S3 from the same account. There is option allowing CloudFront to update the bucket policy so that CloudFront can read the objects from our bucket. There is an option to specify origin path if we put objects in a subfolder, but for this experiment leaving it blank since the object is in the root bucket. For the origin custom headers, we could provide a header name and origin or specified value that CloudFront will forward to the origin on each request, useful for custom origins that would like to know which origins came from where.

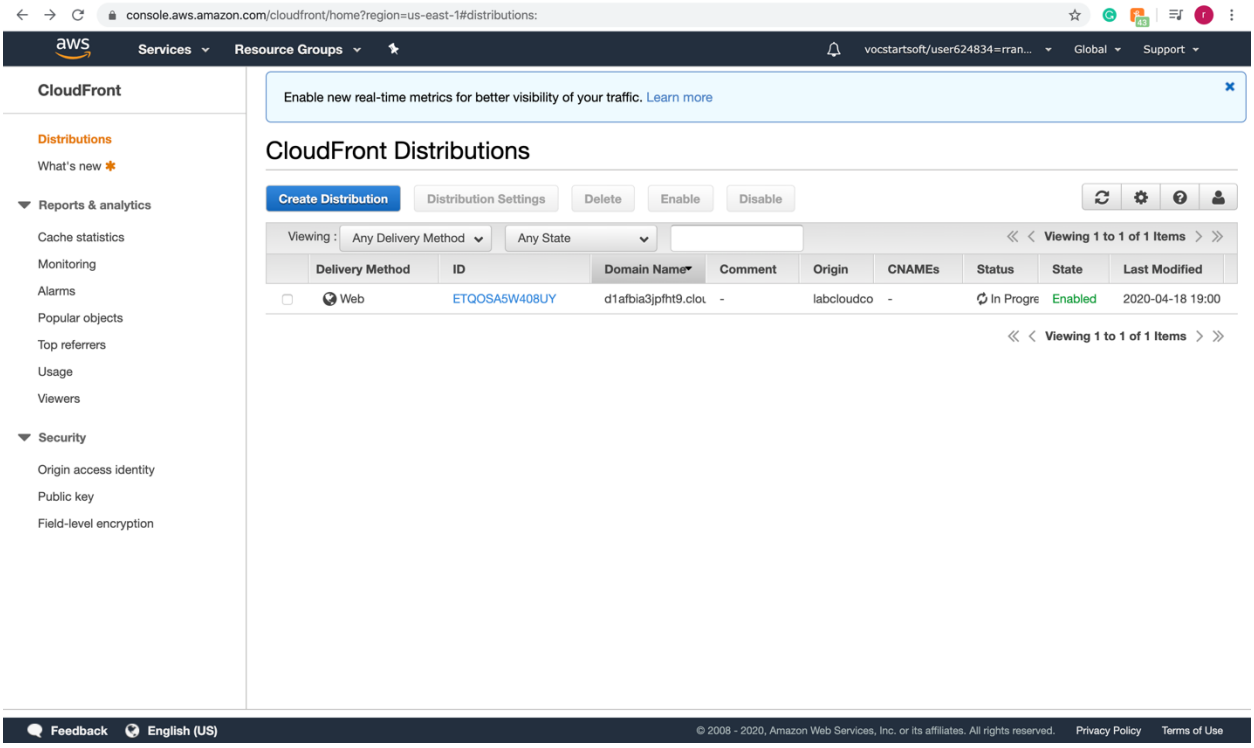
- **Default Cache Behavior Settings**, we have the option of selecting **HTTP and HTTPS**, **Redirect HTTP to HTTPS**, we could support requests using either protocol or use **HTTPS only** for which the HTTP traffic would get dropped. CloudFront allows us to specify which HTTP methods we want to by default it is **GET HEAD**, allowing users to read, write or both to the user. And since we are only doing read only operations for this lab, we can leave it as default. In the **Cache** based on selected we can specify which HTTP header we'd want to forge to the origin, recommended is Whitelist just the headers that our origin will care about, like when the origin is looking for specific HTTP headers to decide which object to return. If we forward all **HTTP headers** CloudFront will actually bypass the caching layers and not attempt to cache the object at all. But since S3 does not look at headers we can just let it be none. The **TTL** (time to leave) that we want the object to stay in cache, we can customize as well, for this lab leaving at default relying on the cache control headers returned from the origin. specifies the cached object lifespan, specified in seconds and the default Max value is for one-year minimum cache life is 0 and default time period is 24 hours. **Lambda** function can call a function on particular action for post process, to manipulate the request or the response.

-**Distribution Settings,** have the ability to specify which parts of network we'd want to use, we could specify a lower price class which would reduce CloudFront costs and restrict viewers to using just edge locations within the regions. This does not mean viewers outside could not access the content it just means they get routed to the nearest edge location within the specified regions. Default root object – URL for default root object. HTTP version Aws also supports HTTP2.0, we can specify a couple of accessing protocols for our objects. IPv6 enable or disable access via IPv6

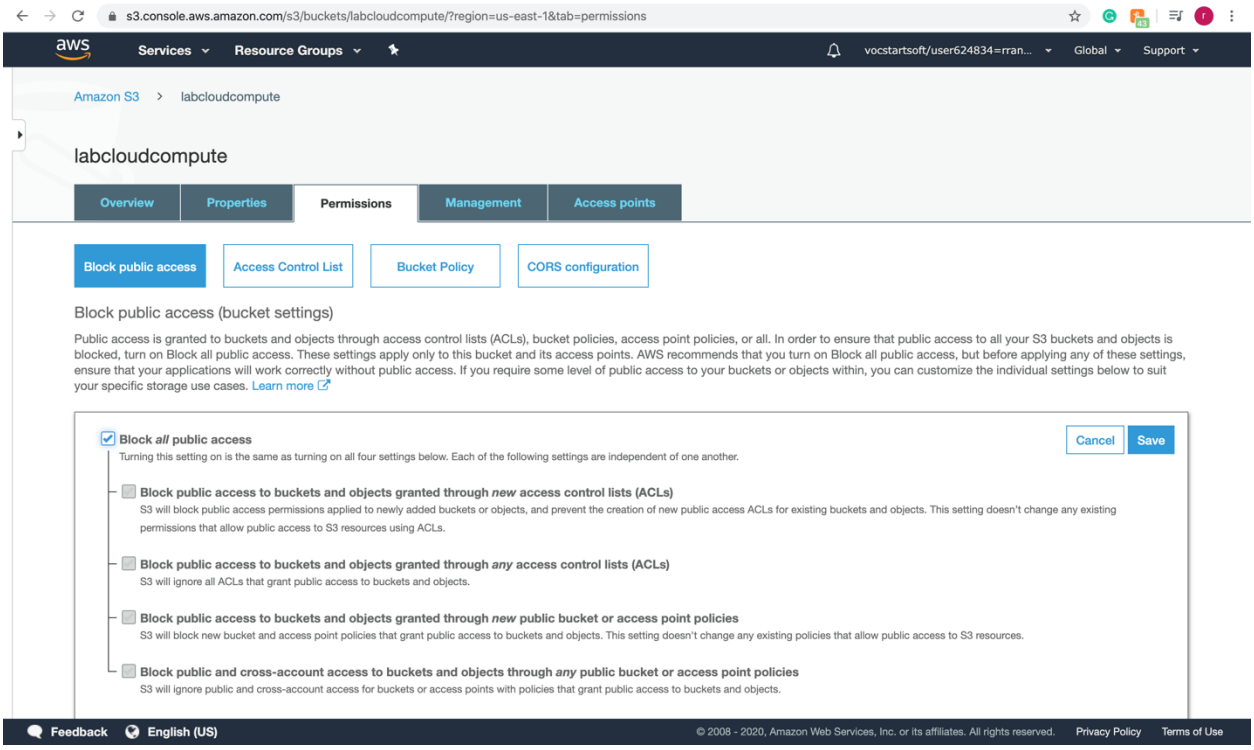




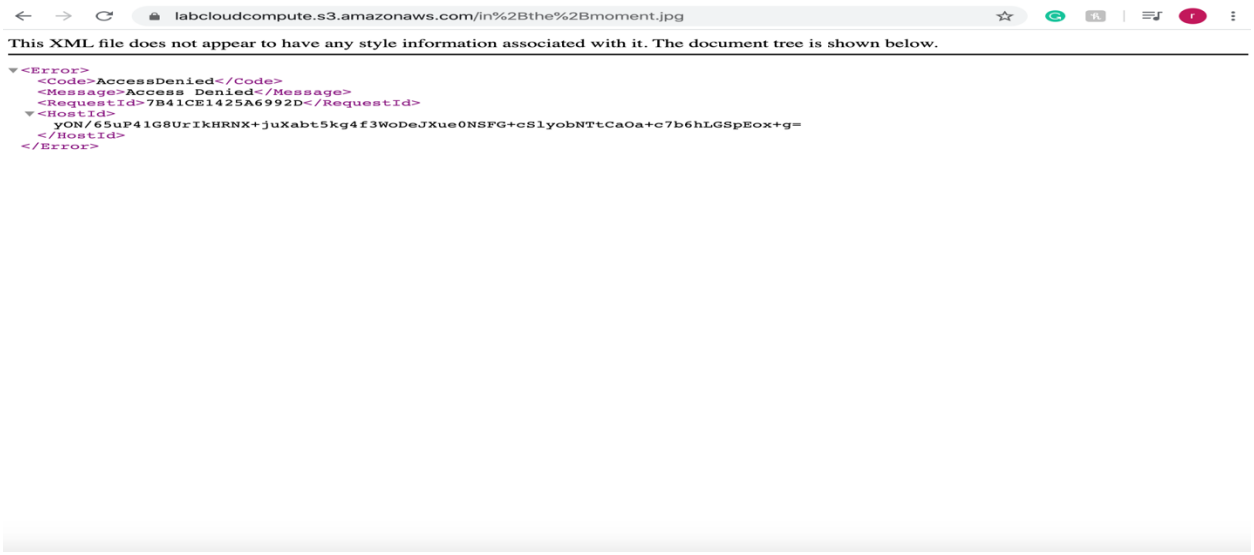
3) The distribution is deployed its domain name is given.



4) Going back to S3 bucket and disable the public read access.



5) Once done that we cannot access the uploaded image in the S3 bucket as previously through object URL.



- We have blocked all the public access to this S3 bucket and removed the read permission from public access suggesting that all the public cannot access the objects in the bucket as of, now this is the reason originally it is not recommended to make the objects public and a notification also

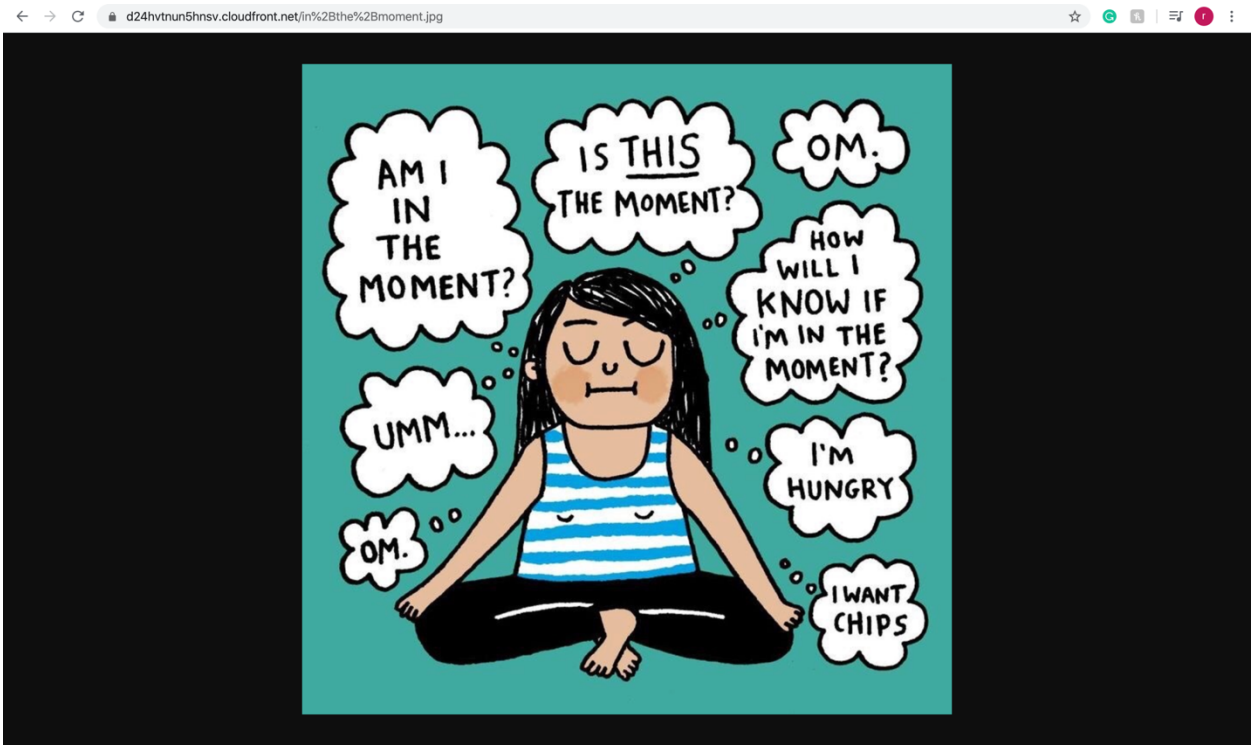
pops up when we tried to make it public. The reason is that anyone would be able to view files also some sensitive datas by anyone.

6) Change the object URL:
https://labcloudcompute.s3.amazonaws.com/in%2Bthe%2Bmoment.jpg

with distribution domain such as;

https://d24hvtnun5hnsv.cloudfront.net?in%2Bthe%2Bmoment.jpg

-We can now access the image through the created distribution network and ensure that this service can read objects in S3 bucket, we did it to see that we can access the objects using CloudFront distribution using the distribution URL.



Amazon S3 (Simple Storage Service) is a better and safe way for storing, managing and distributing data and object storage, from Amazon EC2 or anywhere on the web. Choosing the region where we want the data to be stored and Amazon S3 automatically makes copies of objects on multiple devices across multiple facilities, paying for the storage we actually use. There is no monthly charge and you only pay for what you use, so you don't have to worry about any long-term commitment. S3 does the storage and one of the things that we would want to do is to migrate our images or videos out of our server and serve them from a Content Delivery Network (CDN). The major benefit of a CDN is that it can server our web content from the location closest to your reader, and hence speeding up the loading of site while reducing sever bandwidth usage and also rank well in the search engine.

Amazon CloudFront is the CDN providers that is well integrated with Amazon S3 and best suited. For it to be used as a CDN have to activate CloudFront and configure Amazon S3 with it.
When we are using Cloud front distribution, the case remains true when we are accessing the object for the first time I.e. case when the image is not cached in the edge location. However, the load speed difference changes drastically once any of the user has requested the resource, the reason because now that object has been cached on the edge location closer to the user. The image or object can be accessed from anywhere, if the object available in US and if the request is coming from part of Asia then the request goes halfway around the world making the use of bucket URL slow and lagging can be seen. But that is not case as explained above when using the CloudFront Distribution