

AWS S3 Tutorial

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Current Topics in Distributed Systems: Internet of
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AWS S3 Fundamentals

- Amazon Simple Storage Service (S3) is a storage service,
- Stores and retrieves any amount of unstructured data from anywhere,
- Global services,
- Stores data as objects within buckets (containers for objects)
- Buckets help in Access Control, View Access Logs, Set Regions

AWS S3 Fundamentals (cont.)

- **Bucket**

- ❖ Such as “folder” in the local storage of our personal computers.

- **Object**

- ❖ Such as “file” in the local storage of our personal computers.



Create S3 Bucket

- <https://aws.amazon.com/s3/>
- To create a bucket, in the AWS console click on **S3**, and then click **Create Bucket**.
- Enter a **Bucket Name** and choose the **region: US East (N. Virginia)**.
- Click **Create** to save your bucket.

Create S3 Bucket (cont.)

Amazon S3

Buckets

Access Points

Object Lambda Access Points

Batch Operations

Access analyzer for S3

Block Public Access settings for this account

Storage Lens

Dashboards

AWS Organizations settings

Feature spotlight 3

AWS Marketplace for S3

Amazon S3

Account snapshot

Storage lens provides visibility into storage usage and activity trends. [Learn more](#)

View Storage Lens dashboard

Buckets (0)

Refresh

Copy ARN

Empty

Delete

Create bucket

Buckets are containers for data stored in S3. [Learn more](#)

Find buckets by name

< 1 > ⚙

Name ▲	AWS Region ▼	Access ▼	Creation date ▼
<div>No buckets</div> <div>You don't have any buckets.</div> <div>Create bucket</div>			

Create S3 Bucket (cont.)

AWS provides naming standards when naming an AWS bucket.

- The bucket name can be between 3 and 63 characters long, and can contain only lower-case characters, numbers, periods, and dashes.
- Each label in the bucket name must start with a lowercase letter or number.
- The bucket name cannot contain underscores, end with a dash, have consecutive periods, or use dashes adjacent to periods.
- The bucket name cannot be formatted as an IP address (198.51.100.24).

<https://docs.aws.amazon.com/awsccloudtrail/latest/userguide/cloudtrail-s3-bucket-naming-requirements.html>

Create S3 Bucket (cont.)

Amazon S3



Buckets

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▼ Storage Lens

Dashboards

AWS Organizations settings

Feature spotlight 3

► AWS Marketplace for S3

Amazon S3 > Create bucket

Create bucket

Buckets are containers for data stored in S3. [Learn more](#)

General configuration

Bucket name

myawsbucket

Bucket name must be unique and must not contain spaces or uppercase letters. [See rules for bucket naming](#)

AWS Region

US East (N. Virginia) us-east-1

Copy settings from existing bucket - *optional*

Only the bucket settings in the following configuration are copied.

Choose bucket

Block Public Access settings for this bucket

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to this bucket or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

☒ Block all public access

Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- ☒ **Block public access to buckets and objects granted through *new* access control lists (ACLs)**
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- ☒ **Block public access to buckets and objects granted through *any* access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.
- ☒ **Block public access to buckets and objects granted through *new* public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- ☒ **Block public and cross-account access to buckets and objects through *any* public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

AWS free usage tier

- As part of the AWS Free Usage Tier, you can get started with Amazon S3 for free. Upon sign-up, new AWS customers receive 5GB of Amazon S3 storage in the S3 Standard storage class; 20,000 GET Requests; 2,000 PUT, COPY, POST, or LIST Requests; and 15GB of Data Transfer-out each month for one year.
- Your usage for the free tier is calculated each month across all AWS Regions except the AWS GovCloud (US) and automatically applied to your bill; unused monthly usage will not roll over.
- See offer terms for more details.

Amazon S3 pricing

- You pay for storing objects in your S3 buckets.
- <https://aws.amazon.com/s3/pricing/>

First 50 TB / Month	\$0.0245 per GB
Next 450 TB / Month	\$0.0235 per GB
Over 500 TB / Month	\$0.0225 per GB

You have an AWS Educate account?

aws.amazon.com/education/awseducate/



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Your Cloud Journey Starts Here

Join AWS Educate

Sign in to AWS Educate





AWS Educate Starter Account

Your cloud journey has only just begun. Use your AWS Educate Starter Account to access the AWS Console and resources, and start building in the cloud!

AWS Educate Starter Account

Your account has an estimated **100** credits remaining and access will end on **Nov 2, 2021**.

Note: Clicking this button will take you to a third party site managed by Vocareum, Inc. ("Third Party Servicer"). In addition to the AWS Educate terms of service, your use of the AWS Educate Starter Account is governed by the Third Party Servicer's terms, including its Privacy Policy. AWS assumes no responsibility or liability and makes no representations or warranties regarding services provided by a Third Party Servicer.

Welcome to your AWS Educate Account

AWS Educate provides you with access to a wide variety of AWS Services for you to get your hands on and build on AWS! To get started, click on the AWS Console button to log in to your AWS console.

Please read the FAQ below to help you get started on your Starter Account.

[What are the list of services supported?](#)

[What regions are supported with Starter Accounts or Classroom Accounts?](#)

[I can't start any resources. What happened?](#)

[Can I create users within my Starter or Classroom Account for others to access?](#)

[Can I create my own IAM policy within Starter Account or Classroom?](#)

[Can I use marketplace software with my Starter Account or Classrooms?](#)

[Are there any restrictions on AWS services in my AWS Educate Account?](#)

[Are FPGA Instances Supported?](#)

Your AWS Account Status



Active
full access ()



\$100
remaining credits (estimated)



2:60
session time

[Account Details](#)

[AWS Console](#)

Please use AWS Educate Account responsibly. Remember to shut down your instances when not in use to make the best use of your credits. And, don't forget to logout once you are done with your work!

NOTE: CloudFront service is temporarily unavailable.

Welcome to

AWS Educate provides you with the tools to build on AWS! To get started, you need to create an AWS account.

Please read the FAQ to learn more about AWS Educate.

- What are the benefits of AWS Educate?

- What regions are available?

Credentials

AWS Access

Session started at: 2021-02-15T00:36:13-0800

Session to end at: 2021-02-15T03:36:13-0800

Remaining session time: 2h58m10s

AWS Starter account

Term: 260 days 02:14:49

AWS CLI:

[Show](#)

AWS CLI:

Copy and paste the following into ~/.aws/credentials

[default]

aws_access_key_id=

aws_secret_access_key=

aws_session_token=

Amazon SDK for Python

<https://boto3.amazonaws.com/v1/documentation/api/latest/guide/s3-examples.html>

- **Examples on S3**
 - [Amazon S3 buckets](#)
 - [Uploading files](#)
 - [Downloading files](#)
 - [File transfer configuration](#)
 - [Presigned URLs](#)
 - [Bucket policies](#)
 - [Access permissions](#)
 - [Using an Amazon S3 bucket as a static web host](#)
 - [Bucket CORS configuration](#)
 - [AWS PrivateLink for Amazon S3](#)

```
1  import logging
2  import boto3
3  from botocore.exceptions import ClientError
4  import configparser
5  import os
6  def create_bucket(bucket_name):
7
8      aws_profile = "default"
9      config = configparser.ConfigParser()
10     config.read(os.path.expanduser("C:\\\\Users\\narmehran\\.aws\\credentials"))
11     aws_access_key_id = config.get(aws_profile, "aws_access_key_id")
12     aws_secret_access_key = config.get(aws_profile, "aws_secret_access_key")
13     aws_session_token=config.get(aws_profile, "aws_session_token")
14     s3_client = boto3.client(
15         's3',
16         aws_access_key_id=aws_access_key_id,
17         aws_secret_access_key=aws_secret_access_key,
18         aws_session_token=aws_session_token)
19
20     # Create bucket
21     try:
22         s3_client.create_bucket(Bucket=bucket_name)
23     except ClientError as e:
24         logging.error(e)
25         return False
26     return True
27
28 print(create_bucket("namebucket2021"))
```

Launch a public website by
AWS S3 ?

Amazon Route 53

- *Amazon Route 53* is a highly available and scalable *Domain Name System (DNS)* web service.
- Route 53 is used for three main functions in any combination:
 - ✓ domain registration,
 - ✓ DNS routing, and
 - ✓ health checking



Amazon Route 53

You can use Amazon Route 53 to register new domains, transfer existing domains, route traffic for your domains to your AWS and external resources, and monitor the health of your resources.

For registering a domain name



DNS management

If you already have a domain name, such as example.com, Route 53 can tell the Domain Name System (DNS) where on the Internet to find web servers, mail servers, and other resources for your domain.

[Learn More](#)

[Get started now](#)



Traffic management

Route 53 traffic flow provides a visual tool that you can use to create and update sophisticated routing policies to route end users to multiple endpoints for your application.

[Learn More](#)

[Get started now](#)



Availability monitoring

Route 53 can monitor the health and performance of your application as well as your web servers and other resources. Route 53 can also redirect traffic to healthy resources.

[Learn More](#)

[Get started now](#)

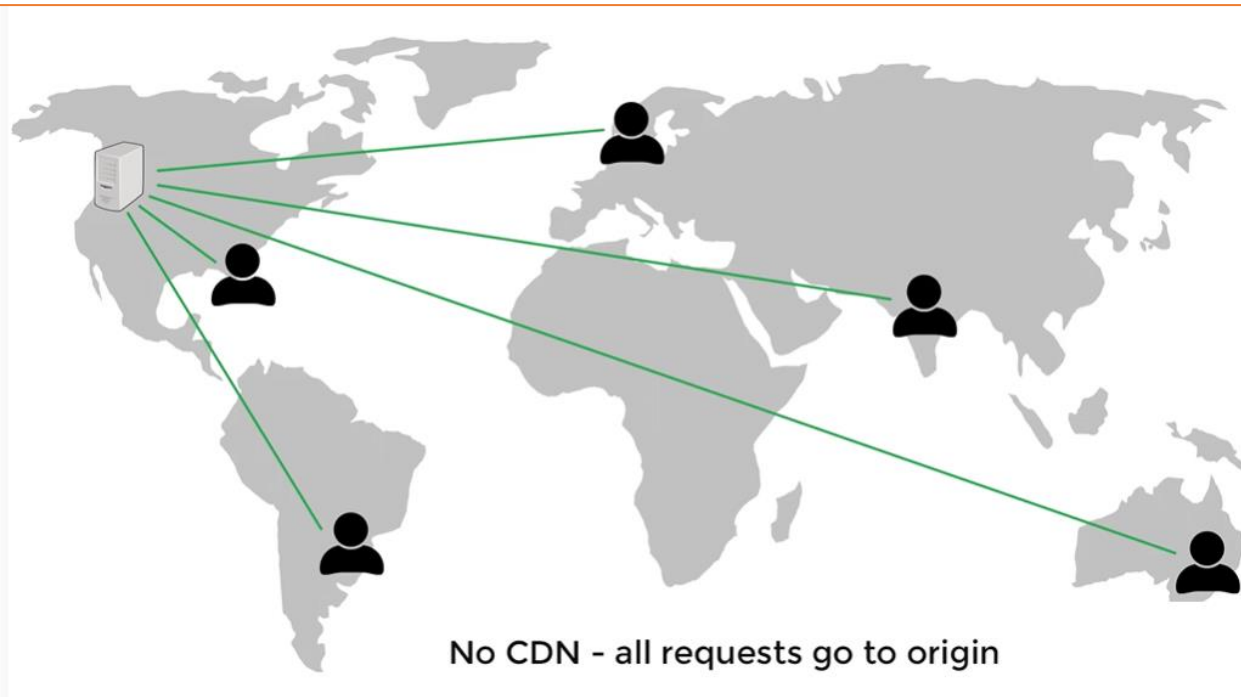


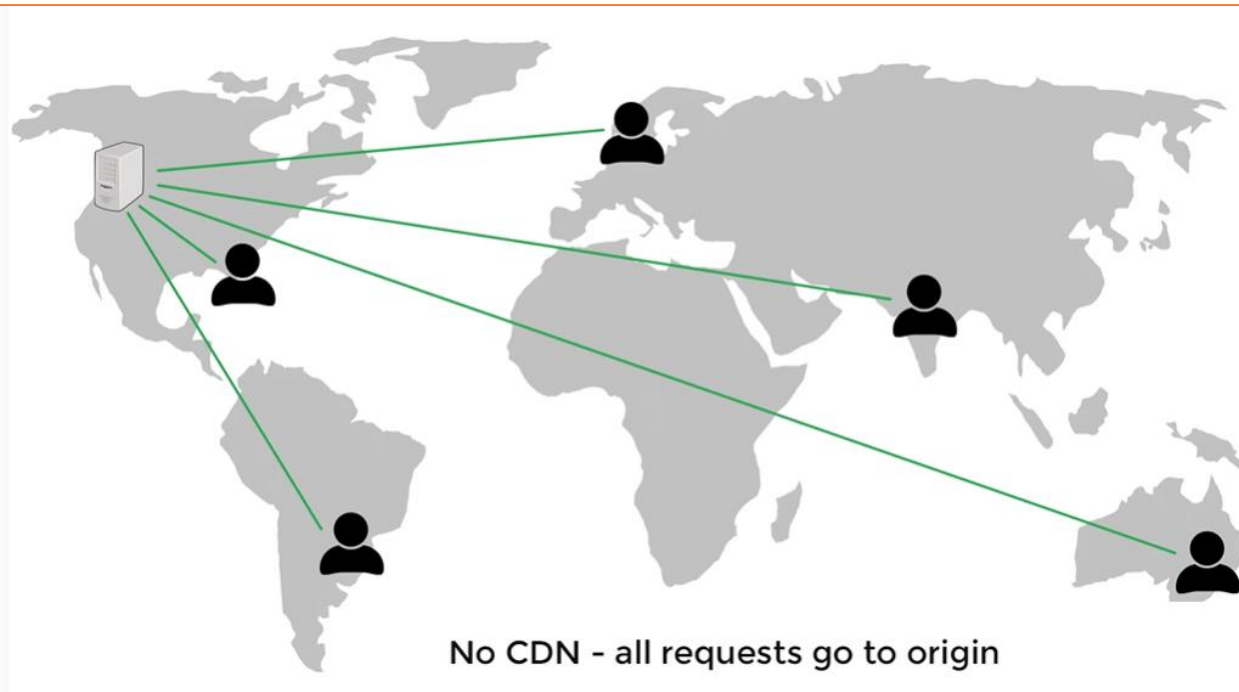
Domain registration

If you need a domain name, you can find an available name and register it by using Route 53. You can also make Route 53 the registrar for existing domains that you registered with other registrars.

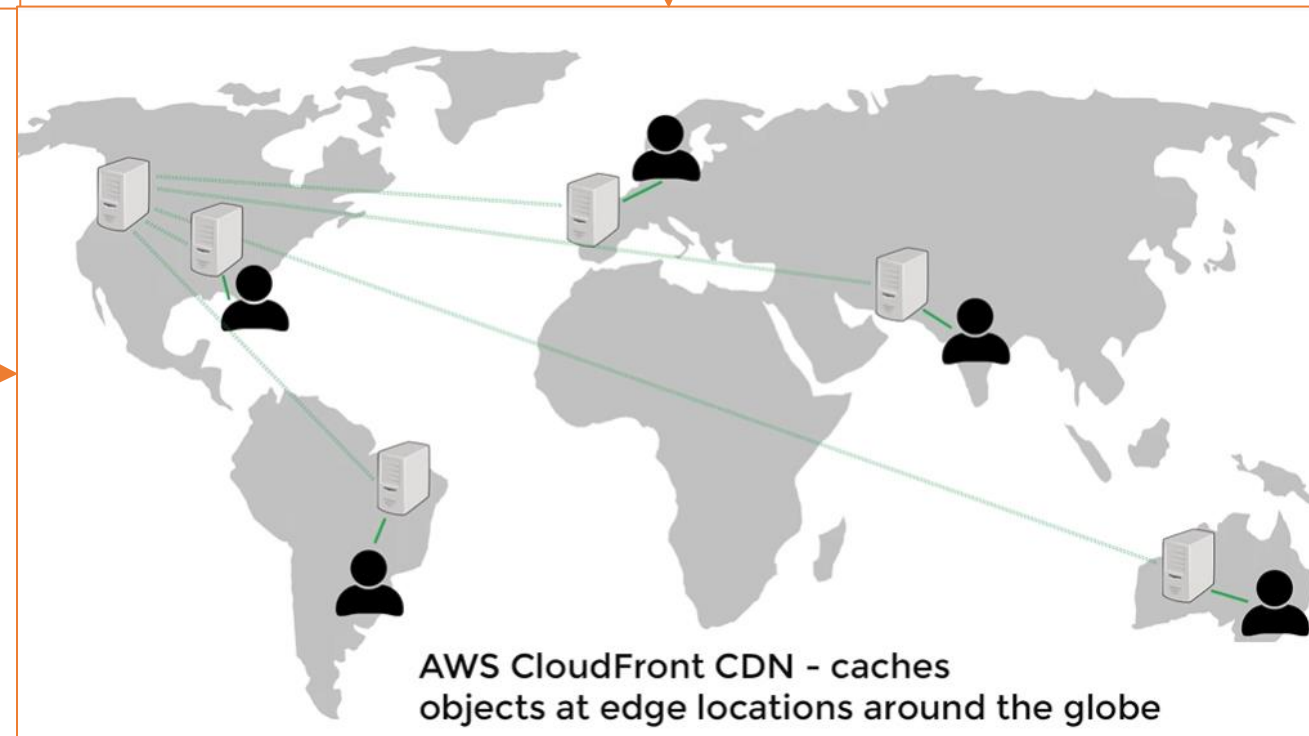
[Learn More](#)

[Get started now](#)





AWS CloudFront



Frontend Developing with Amazon Web Services

- Storing the website in S3
- Providing DNS by Route 53
- Providing CDN by CloudFront

Policy for public access?

```
{  
  "Version": "2012-10-17",  
  "Statement": [  
    {  
      "Sid": "PublicReadGetObject",  
      "Effect": "Allow",  
      "Principal": "*",  
      "Action": "s3:GetObject",  
      "Resource": "arn:aws:s3:::[YOUR_BUCKET_NAME]/*"  
    }  
  ]  
}
```

Assignment 12

- 1) In assignment 5.2, you were supposed to read a data file (*csv file*) from a website. So firstly, such as that assignment, download the file.
http://iot.ee.surrey.ac.uk:8080/datasets/traffic/traffic_feb_june/index.html
- 2) Then count the number of vehicles every day passing through the road by using the columns: vehicleCount. But this time, please utilize the methods of Apache Spark.
- 3) Finally, upload the counted data to S3 bucket as an *index.html* file and Browser it. Just please manually configure policies of the static website.

Thanks for your attention