Agenda

- (Background) Bundling a Web app.

- Frontend app deployment to AWS platform.
  - What services?
  - Ans: S3 and CloudFront.

- Full-stack web app.
  - Deployment as a single CDK app.
  - Custom domain name.

Web App bundling

- Development versus Production environment.
  - Hot module replacement (HMR)
- Dynamic versus static version of a web app

$ cd myWebApp
$ npm run dev   (Start development server; HMR support)
$ npm i serve –g   (Simple web server ; No HMR support)
$ npm run build   (Build static version of app; BUNDLING)
$ serve ./dist   (Host static web app / website)

S3 Website hosting

- We can configure an S3 bucket to host a website or static web app.

```
export class FrontendStack extends Stack {
  constructor(scope: Construct, id: string, props: StackProps) {
    super(scope, id, props);

    const siteBucket = new s3.Bucket(this, "SiteBucket", {
      publicReadAccess: true,
      removalPolicy: RemovalPolicy.DESTROY,
      autoDeleteObjects: true,
      blockPublicAccess: s3.BlockPublicAccess.BLOCK_ACLS,
      accessControl: s3.BucketAccessControl.BUCKET_OWNER_FULL_CONTROL,
      websiteIndexDocument: "index.html",
    });

    new s3deploy.BucketDeployment(this, "DeployWebsite", {
      sources: [s3deploy.Source.asset("./dist")],
      destinationBucket: siteBucket,
    });

    new CfnOutput(this, "WebsiteURL", {
      value: siteBucket.bucketWebsiteUrl,
    });
  }
}
```

http://s3website-sitebucket397a1860-sgwbs3uo1gzb.s3-website-eu-west-1.amazonaws.com/
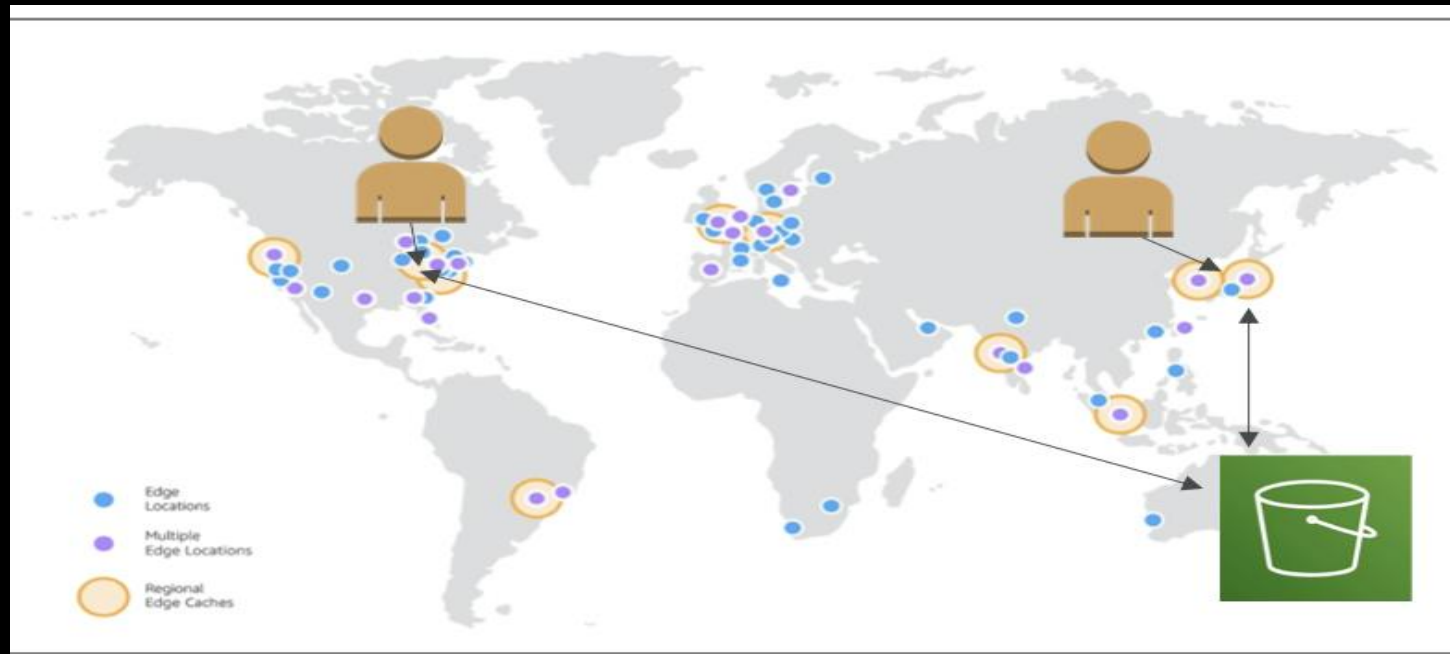
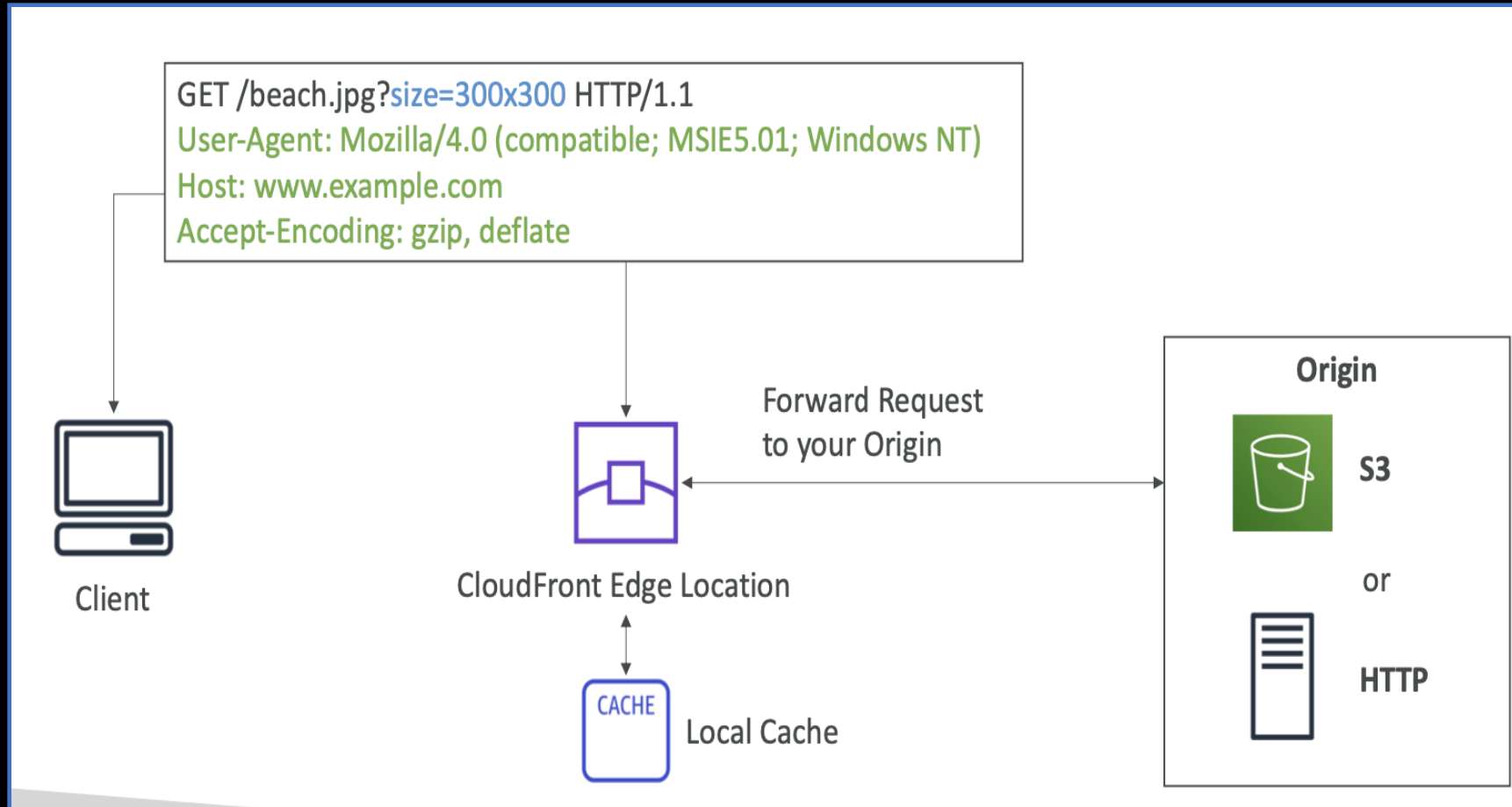# AWS CloudFront (CDN)

CloudFront / CDN

- A CDN (Content Delivery Network) is a network of geographically distributed servers that <u>cache</u> copies of content close to the end users, thus lowering <u>latency</u> when they download or stream content.
  - Servers = Edge locations or Points of Presence (POPs).
  - Content = Web assets, Documents, Videos, etc

- CloudFront – 400+ POPs in 90 cities and across 47 different countries.

- DDoS protection.

ClousFront - Resources

- Two key infrastructure resource types:

1. Origin – The source of your content, e.g. S3.

2. Distribution - A distribution tells CloudFront where you want content to be delivered from, and the details about how to track and manage content delivery.
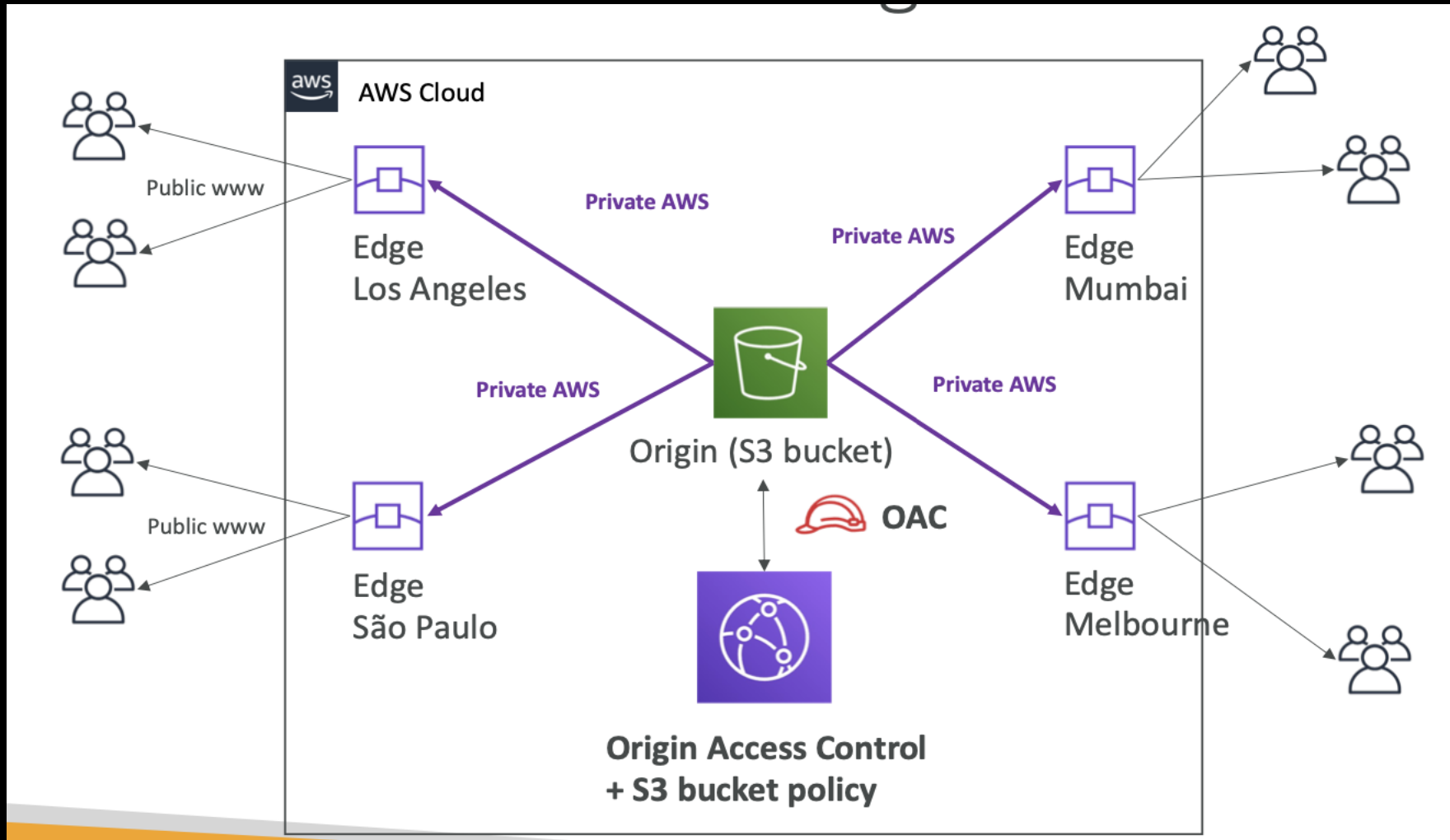
CloudFront resources

Cloudfront Origins.

- Source of your content.

1. S3 bucket.
   - Enhanced security with CloudFront Origin Access Identity (OAI)
     - Origin Access Control (OAC) Is replacing OAI.
   - CloudFront can be used as an ingress (to upload files to S3)

2. Custom origin (HTTP).
   - API Gateway.
   - Application load Balancer.
   - EC2 instance.
   - S3 website.

S3 as a Cloudfront Origin.

Demo

- Objective: Provision a CloudFront distribution for a standalone React app, using S3 as the origin.

To be continued …..