Content Delivery Network

Amazon CloudFront

TEAM 3

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AGENDA

- Cloud Computing
- Content Delivery Network
- Basic Structure of CDN
- How CDN works
- Amazon CloudFront
- Other companies using CDN

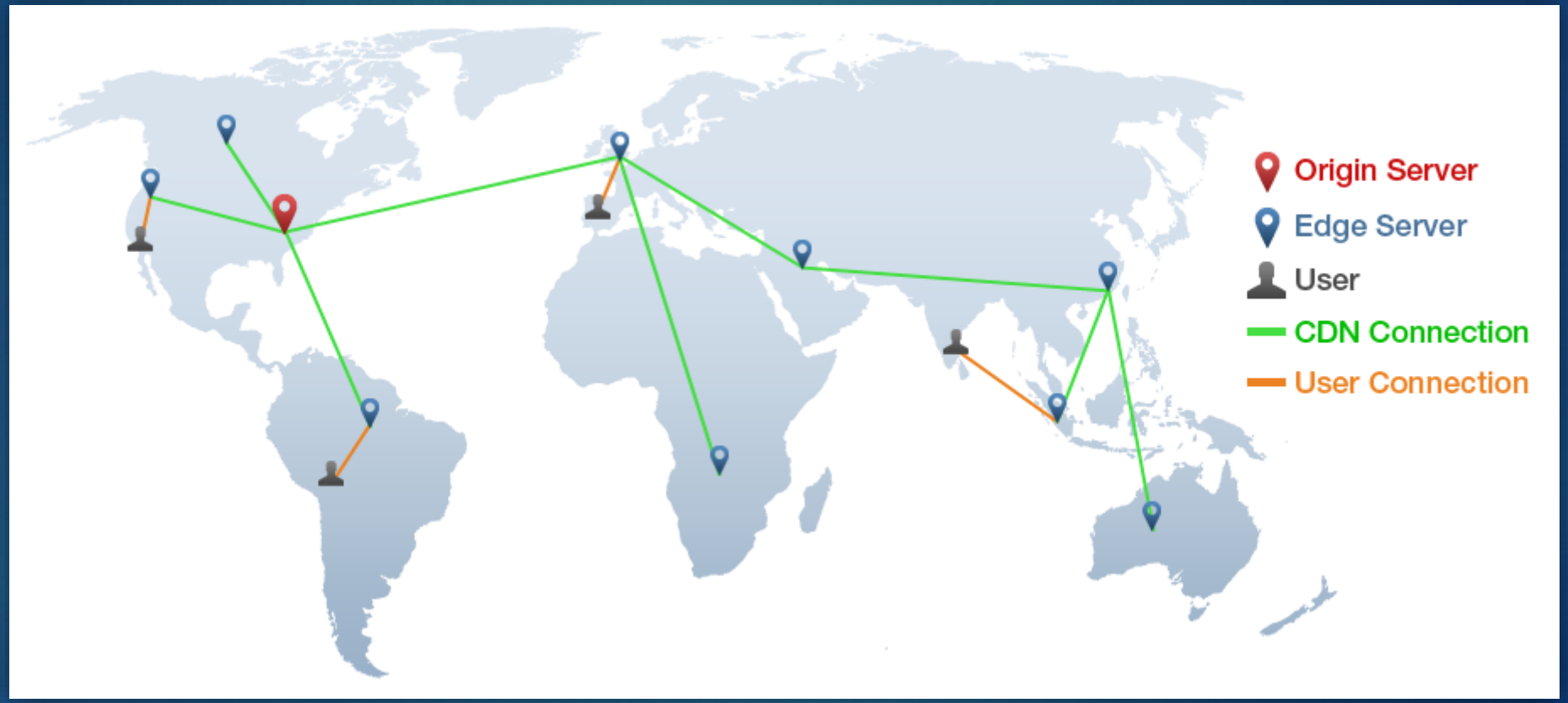
CLOUD COMPUTING

- Involves deploying groups of remote servers and software networks
- Distributed Computing on internet or delivery of computing service over the internet. E.g. Yahoo, Gmail
- Services and solutions are delivered and consumed in real time over internet
- Rapid elasticity
- Concept evolved in 1950 (IBM) called RTE
- In 2006, Amazon provided first public cloud AWS (Amazon Web Service)

CONTENT DELIVERY NETWORK

- A **content delivery network** or **content distribution network** (**CDN**) is a large distributed system of servers deployed in multiple data centers across the Internet. The goal of a **CDN** is to serve **content** to end-users with high availability and high performance.

BASIC STRUCTURE OF CDN



WHICH COMPANIES NEED CDN

Some types of companies will almost **always benefit** from a CDN:

- Sites streaming large video files
- Sites which consist of mainly large media files like image sites
- Sites which have known heavy traffic in different countries

Some companies almost **never need** a CDN:

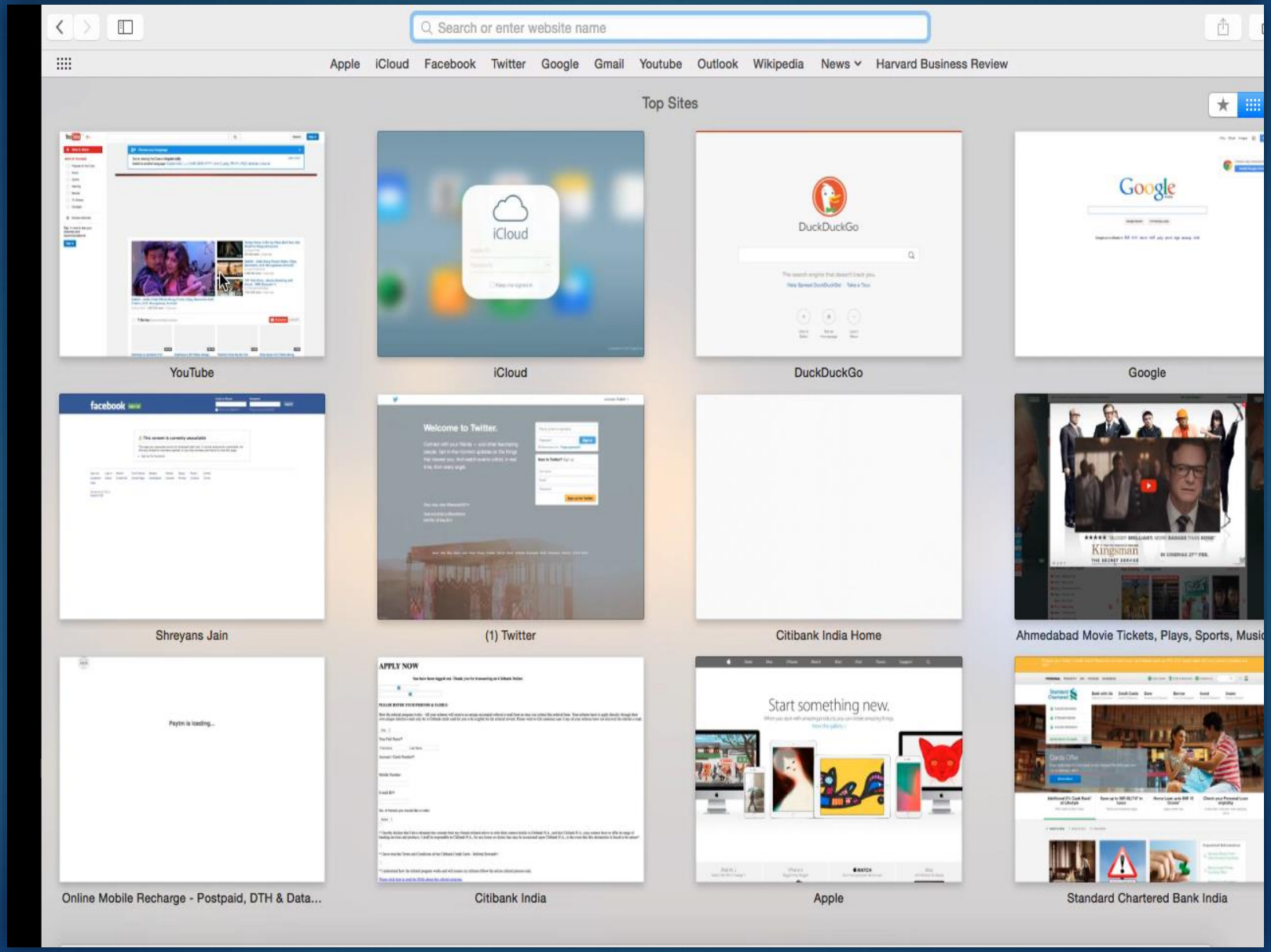
- Local business sites (restaurants, beauty parlors, etc.)
- Sites that have their main traffic in one geographic area or region

WAYS IN WHICH CDN CAN BE USED

- Uses CDN of Google
- All the contents of a page may not come from the same data center.

- Had been using Amazon's Server for CDN since 2010
- Migrated to it's own CDN, after 2012, which is now known as Open Connect

HOW CDN WORKS



HTTP Requests - PROTOCOLS


```
private final String USER_AGENT = "Mozilla/5.0";

    private void sendGet() throws Exception {
    String url = "http://www.google.com/search?q=bob";
            URL obj = new URL(url);
    HttpURLConnection con = (HttpURLConnection) obj.openConnection();
    con.setRequestMethod("GET");
    //add request header
    con.setRequestProperty("User-Agent", USER_AGENT);
    int responseCode = con.getResponseCode();
}
```

Desired OUTPUT OF GET CALL

Sending 'GET' request to URL :
http://www.google.com/search?q=bob
Response Code : 200
Google search result...

POST CALL METHOD


```
private final String USER_AGENT = "Mozilla/5.0";
private void sendPost() throws Exception {
        String url = "https://selfsolve.apple.com/wcResults.do";
        URL obj = new URL(url);
        HttpsURLConnection con = (HttpsURLConnection) obj.openConnection();
        //add request header
        con.setRequestMethod("POST");
        con.setRequestProperty("User-Agent", USER_AGENT);
        con.setRequestProperty("Accept-Language", "en-US,en;q=0.5");
String urlParameters ="sn=C02G8416DRJM&cn=&locale=&caller=&num=12345";
        int responseCode = con.getResponseCode();
    }
```

Desired OUTPUT OF POST CALL

Testing 2 - Send Http POST request

Sending 'POST' request to URL : https://selfsolve.apple.com/wcResults.do

Post parameters : sn=C02G8416DRJM&cn=&locale=&caller=&num=12345

Response Code : 200

Apple product detail...

Amazon CloudFront

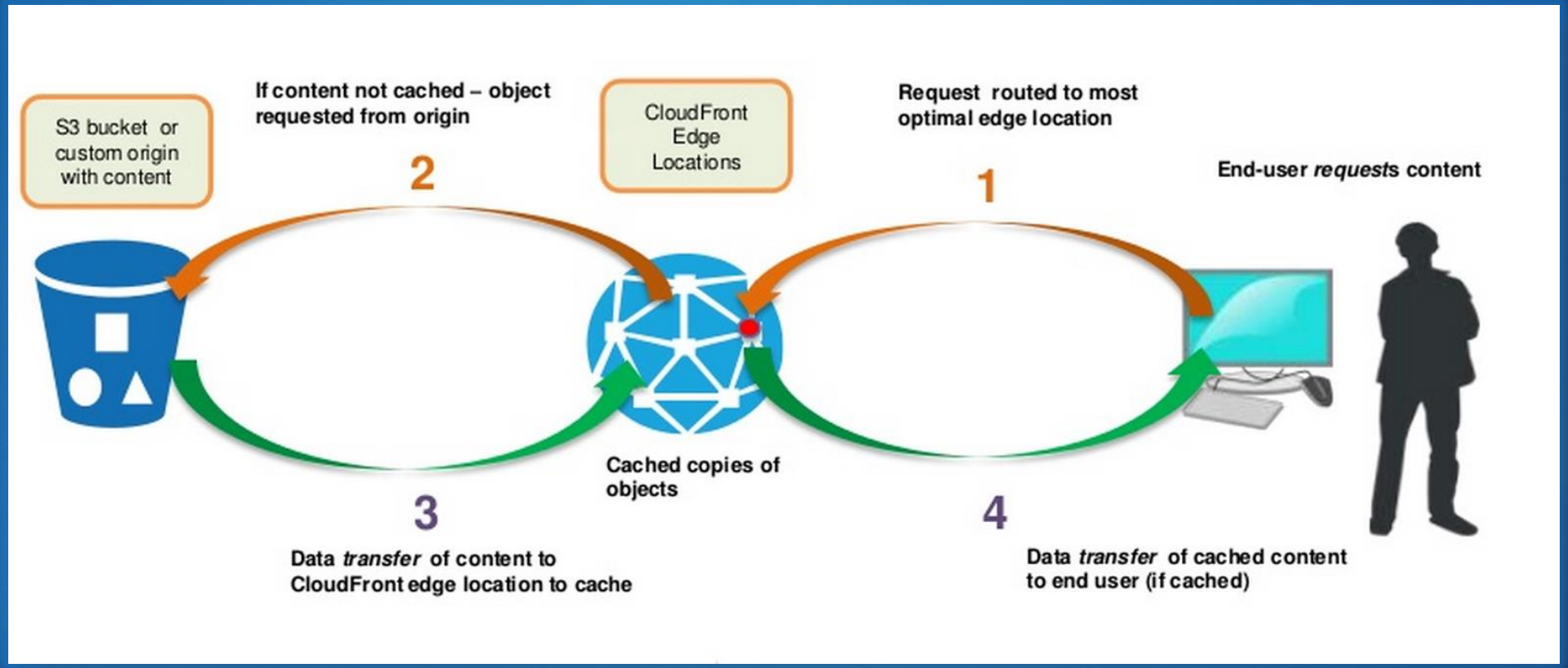
- CDN offered by Amazon Web Services
- Launched on 18th November, 2008
- Worldwide network of Edge Locations
- Works seamlessly with Amazon Simple Storage Service (Amazon S3)

GLOBAL PRESENCE

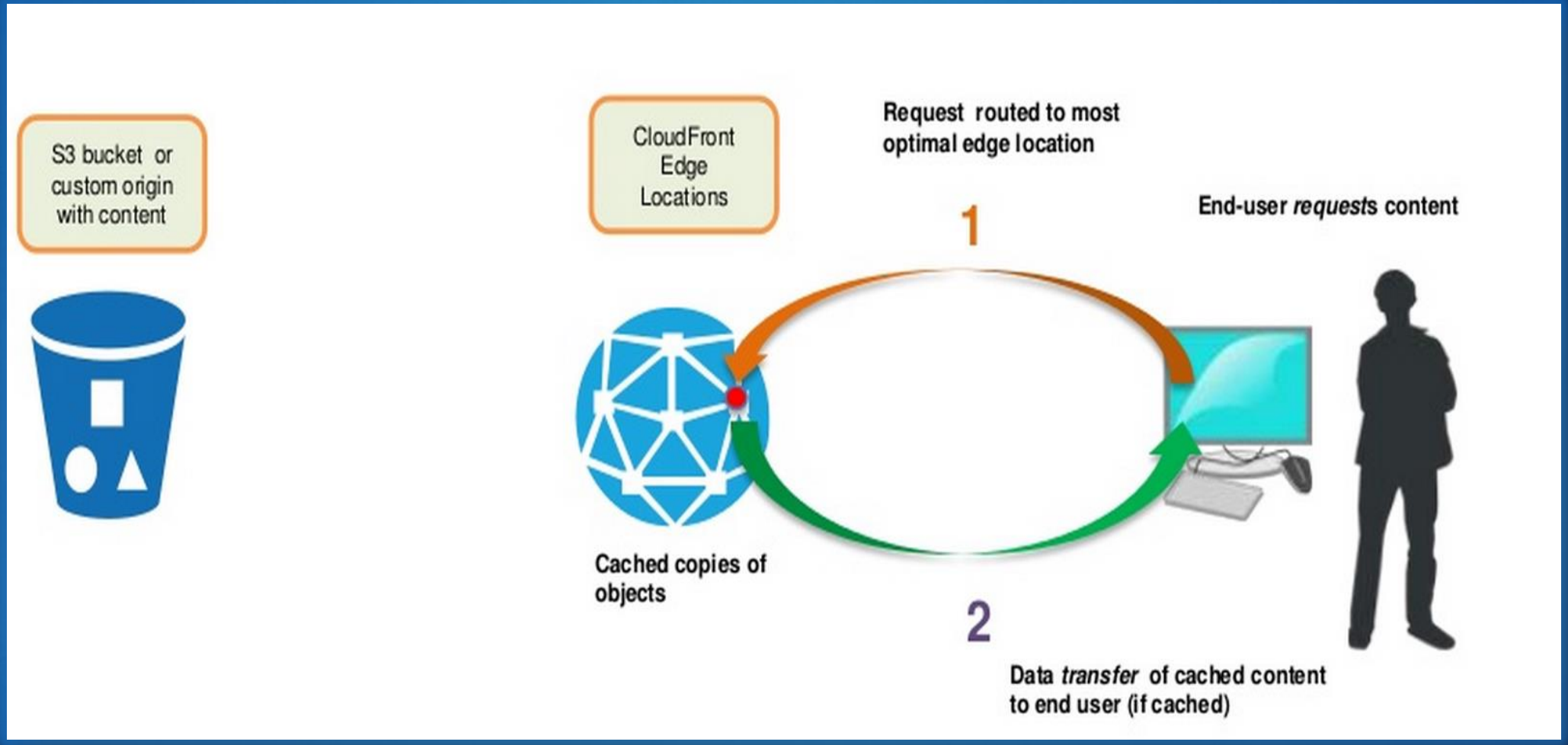
TWO KEY CLOUDFRONT TERMS

- **Distribution**
  - Set of rules that controls how CloudFront will access the content you want to deliver
  - Output = Domain name
- **Origin**
  - Source of your content

HOW IT WORKS: NON-CACHED OBJECT



HOW IT WORKS: CACHED OBJECT



KEY FEATURES OF AMAZON CLOUDFRONT

- Management console
- Dynamic Content
- Support POST/PUT and other HTTP methods
- Custom SSL

KEY FEATURES OF AMAZON CLOUDFRONT CONTINUED..

- Invalidation
- Wildcard CNAME Support
- Zone Apex Support
- Custom Error Responses

Pros

- Low latency
- High bandwidth
- Redundant
- Scalable
- Global
- Cost-effective

Cons

- Control over cached content is limited
- Support costs extra
- HTTP service only

Who's using cloud front and how they are using it?


Virgin atlantic
Earth Networks
Taking the Pulse of the Planet
RED LION HOTELS CORPORATION
FCBARCELONA
més que un club
PBS
Roambi
amazon
HyperStratus
cmune
SAMSUNG
CITYTECH
ADTsys
urbanspoon
Pixamba
SECOND LIFE
urmystar
One Hour Translation
Forward
EnterpriseDB
Paprika Lab
R7
soundtrckr
appMobi
SEGA
Ci&T
business agility
playfish
marcellus
aiCACHE
Classle
twitpic
onoko
softonic
IMDb

PBS

PBS Interactive says it has experienced fifty percent fewer errors in its video streaming performance using CloudFront compared to its previous CDN.

"We are extremely pleased with the performance and ease of use that CLoudFront offers for streaming videos to different devices. With fewer errors, CloudFront delivers a great experience to our viewers, and that's very important for the success of our business…using Amazon CloudFront is so simple and reliable that the team doesn't have to think about it. It all just works, freeing us to focus o building cool applications. "

ENVOY MEDIA GROUP

Envoy Media Group was able to reduce costs by

~20% off costs using CloudFront.

"Our Costs have been reduced by approximately 20%. We no longer have to pay for locker rental and power, our man hour costs have dramatically decreased, and our bandwidth costs are lower… One of the key reasons Envoy moved to AWS was the ability to 'pay as you go.'"

Other Organization providing CDN services

- CacheFly
- Highwinds Network Group
- MaxCDN
- BitGravity
- CDN77
- Internap
- EdgeCast Networks

Conclusion

- CloudFront gives an improvement on both progressive download and streaming.

- If speed is important, and given the fact that streaming is an included bonus, then CloudFront is the optimal choice.

Thank you!