

Day 19/100

Date: 22/12/21

Global application

- A global application deployed in multiple geographies.
- On Aws: this could be Regions and / or Edge location
- Decreased Latency
 - Latency is the time it takes for a network to reach a server.
 - It takes time for fucked from Asia to reach the US.

22/12/21

PAGE

112

DATE

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- Deploy your applications closer to your users to decrease latency, better experience.

- Disaster Recovery (DR)

- If an AWS region goes down (earthquake, storms, power shutdown, policies)

- You can fail-over to another region & have your application still working.

- A DR plan is important to increase the availability of your application.

- Attack protection: Distributed global infrastructure is hard to attack

Global Application in AWS

- Global DNS: Route 53

- Create to route 53 to the closest deployment with least latency.

- Great for disaster recovery strategies

- Global Content Delivery Network (CDN): CloudFront

- Replicate part of your application to AWS Edge location - decrease latency

- Cache common requests - improved user experience and decreased latency

- S3 Transfer Acceleration

- Acceleration global uploads & downloads into Amazon S3.

- Aws Global Accelerator:

- Improve global application availability and performance using the Aws global network.

Aws CloudFront ↗

- Content Delivery Network (CDN)
- Improves read performance, Content is cached at the edge.
- Improves user experience.
- 216 Point of Presence globally [edge location]
- DDoS protection (blocks worldwide) integration with shield, Aws web Application Firewall

- S3 bucket

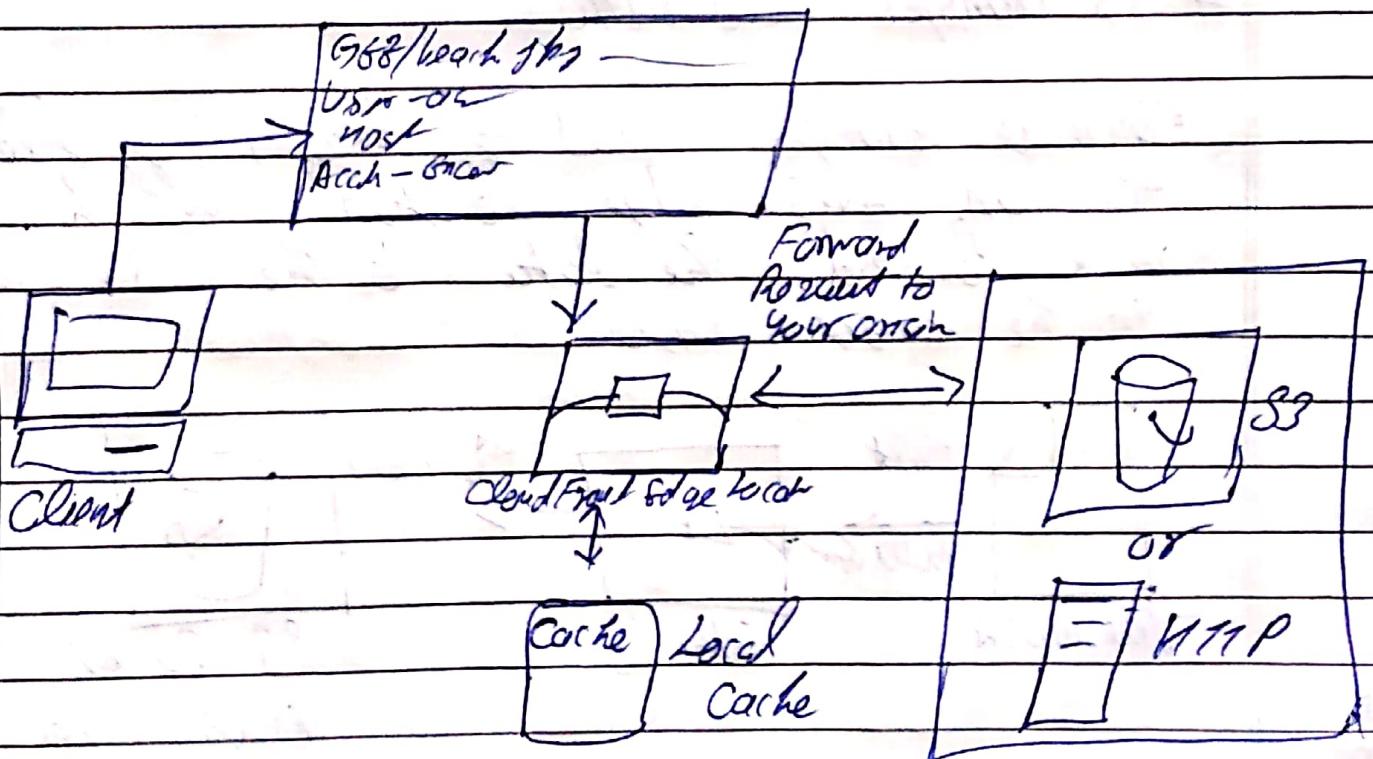
- For distributing files and caching them at the edge
- Enhanced security with CloudFront Origin Access Identity (OAI)
- CloudFront can be used as an ingress (to upload file to S3)

- Custom Origin (HTTP)

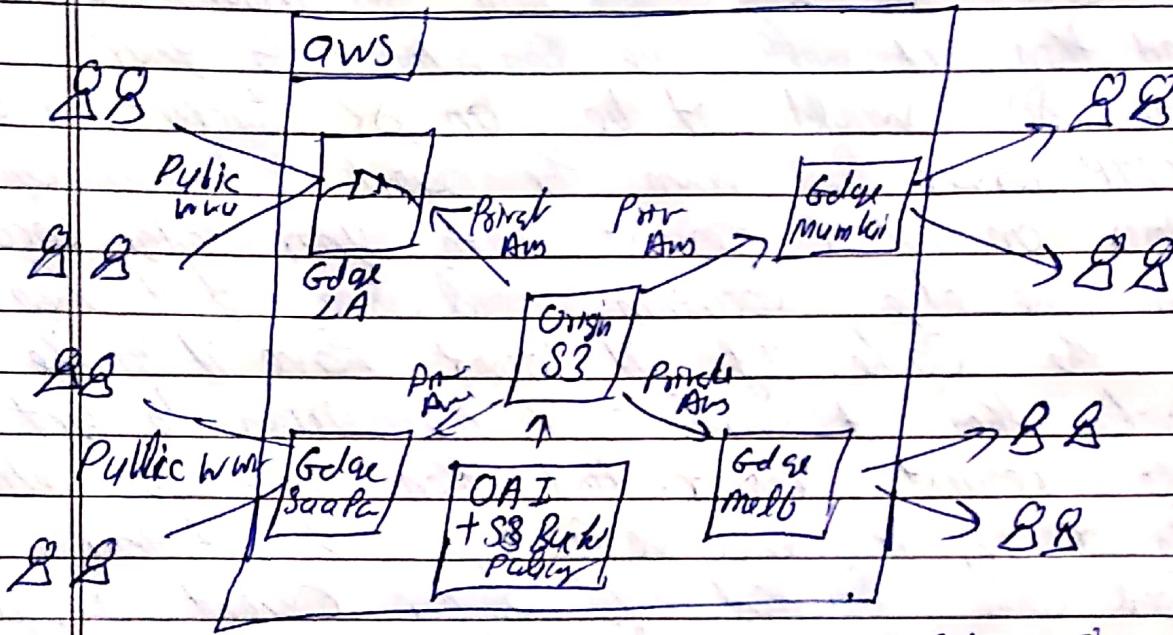
- Application Load Balancer
- EC2 instance
- S3 website (must first enable the bucket as a static S3 website)

CloudFront at a high level

We have the edge location all around the world and then it will be connecting to your origin. So would it be on S3 bucket, or on HTTP Server. And when the client connects and does an HTTP request into your edge location then the edge location will see if it has it in the Cache. If it doesn't have it in the Cache, then it will go to the origin to get the result, and then once you return the result, it will be caching it into your Local Cache. So first if another client requests the same content from the same edge location, then the edge location does not need to go the origin.



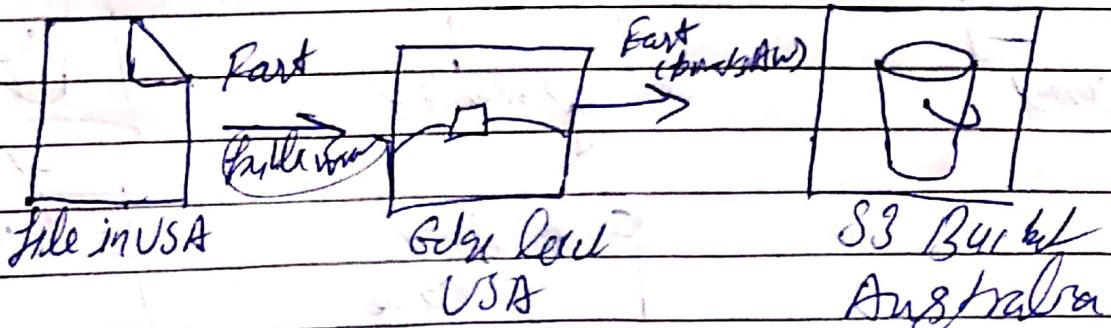
CloudFront - S3 as an Origin



OAI → Origin Access Identity.

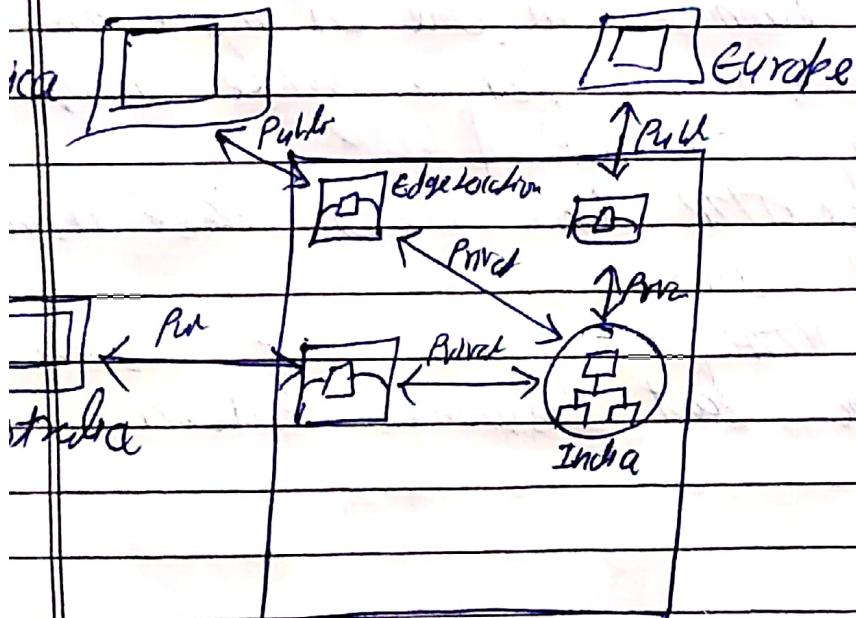
S3 Transfer Acceleration

- Increase transfer speed by transferring file to an AWS edge location which will forward the data to the S3 bucket in the target region



AWS Global Accelerator

- Improve global application availability and performance using the AWS global network
- Leverage the AWS internal network to optimize the route to your application (Gov. improvement)
- 2 Anycast IP are created for your application and traffic and is sent through Edge location



AWS Global Accelerator or CloudFront

- They both use the AWS global network and its edge locations around the world
- Both services integrate with AWS Shield for DDoS protection.

• CloudFront - Content Delivery Network.

- Improves performance for your cacheable content (such as images and videos)
- Content is served at the edge
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• Global Accelerator

- No Caching, proxying packets at the edge to application running in one or more AWS Regions
- Improves performance for a wide range of applications over TCP & UDP.
- Good for HTTP use cases that require static IP addresses
- Good for HTTP use cases that required deterministic, fast regional failover.

AWS Outposts

- Hybrid Cloud: businesses that keep an on-premises infrastructure alongside a cloud infrastructure.
- Therefore, two ways of dealing with IT systems:
 - One for the AWS Cloud (using the AWS Console, or AWS APIs)
 - One for their on-premises infrastructure

- AWS Outposts are "server racks" that offers the same AWS infrastructure, service, APIs & tools to build your own application on-premises just as in the cloud.
- AWS will setup and manage "Outposts Racks" within your on-premises infrastructure and you can start leveraging AWS service on-premises.
- You are responsible for the Outposts Rack physical security.

AWS Outposts:

- Benefits:
 - Low-latency access to on-premises systems
 - Local data processing
 - Data residency
 - Fully managed service.
 - Easier migration from on-premises to the cloud
- Some services that work on Outposts.

Amazon EC2, Amazon EBS, Amazon S3, Amazon EKS, Amazon ECS, Amazon RDS, Amazon GMG

AWS Wavelength

- Wavelength Zones are infrastructure deployments embedded within the telecommunications providers data centers at the edge to the 5G networks.
- Brings AWS services to the edge of the 5G network
- Examples: EC2, FBS, VPC.
- Ultra-low latency applications through 5G networks
- Traffic doesn't leave Communication Service providers (CSP) network
- High-bandwidth and secure connection to the parent AWS Region.
- No additional charges or service agreements
- Use cases: Smart Cities, ML-assisted diagnostics, Connected Vehicles, Interactive live video streams, AR/VR, Real-time Games