

1.AWS CloudFront:

1. AWS CloudFront is a content delivery network (CDN).

It makes your website, images, videos, and APIs load faster for users anywhere in the world.

How it works:

2. Your content is stored on your server (S3 bucket, EC2, backend, etc.)

CloudFront has servers across the world (called edge locations)

3. When a user opens your site:

CloudFront delivers the content from the nearest location

This reduces loading time and improves performance

4. Why do we use CloudFront?

Fast performance

Lower latency (content loads quickly)

Better security (integrates with AWS Shield, WAF, SSL)

Lower cost (less load on your main server)

Example:

If your backend is in Mumbai but a user is in the US,
CloudFront will serve cached data from a US server → very fast.

If anything changes, CloudFront updates automatically.

CloudFront has global caching. If 1000 users request the same image:

Without CloudFront → EC2 serves 1000 times

With CloudFront → EC2 serves once → edge serves 999 times

This saves:CPU,Memory

Network bandwidth

Which reduces your cloud bill.

**CloudFront also uses servers, so why is bandwidth cheaper there?
Why not the same cost as S3/EC2?**

1. CloudFront is built specifically for massive global distribution

CloudFront is AWS's global CDN.
It has hundreds of edge locations worldwide.

These servers do only one job:
Deliver cached content to users.

That specialization allows AWS to:

Buy huge amounts of bandwidth at wholesale rates

Optimize routing heavily

Serve millions of requests at extremely low cost

This makes bandwidth cheaper.

2. CloudFront negotiates cheaper Internet rates

AWS makes deals with ISPs globally:

Direct peering

Reduced transit cost

Bulk bandwidth purchasing

Because CloudFront moves massive amounts of data every second worldwide, AWS gets cheaper prices → passes savings to customers.

S3/EC2 are not optimized like that.