Cloud-Scale Content Distribution
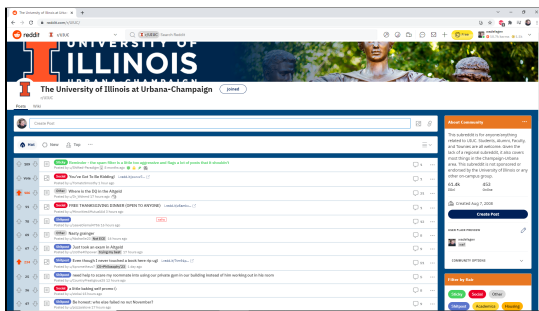As we deploy to a cloud-scale, there are twdifferent types of content we need to deliver:

- Static Content:

    ○ Static Caching Policy?

- Dynamic Content:

    ○ Dynamic Caching Policy?

Example: https://reddit.com/r/uiuc
reddit.com is a community organized into subreddits that focus on particular topics. r/uiuc/ is the subreddit for the UIUC community:

https://reddit.com/r/uiuc

Static Content?

Dynamic Content?

Motivation: Does the user need to visit **our server** for content that is served to all users?

- If not, what service could we rent?

- What advantages can we get by renting caches?

Content Delivery Networks (CDNs)
A Content Delivery Network (CDN) is a system of many servers physically located in geographically diverse locations.

- All CDNs must have a source for the content. This source is known as the _____.

- CDNs usually use **both** age and etag based caches strategies and store their cache on _____.

- Once the data from the origin is in the CDN cache, the CDN can serve this content. This provides five key benefits:

    1. [Compute]:

    2. [Speed]:

    3. [Server Security]:

    4. [Reliability]:

    5. [Bandwidth]:

CloudFlare CDN Locations	AWS CloudFront Locations
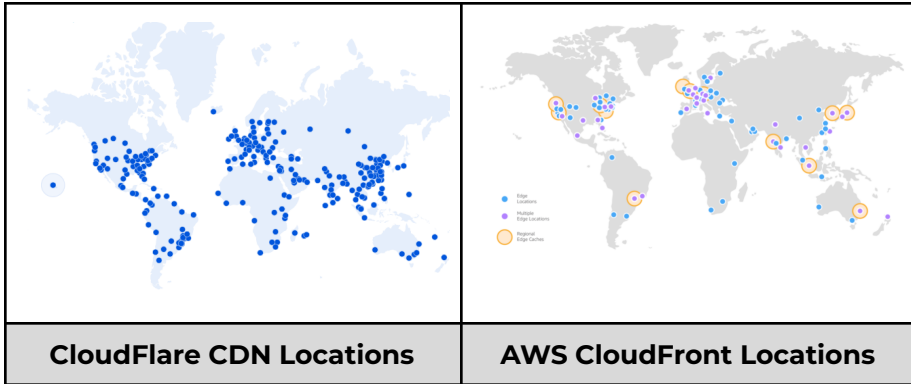
User ⇔ CDN Interaction Diagram

User	CDN	Origin
`GET /page/` `Host: cdn.example.com`		

How do we add a CDN to our service?

[Step 1]: Find a CDN provider we want to use:

Providers	Current Pricing
- CloudFlare CDN - Amazon AWS CloudFront - Google Cloud CDN - Azure Content Delivery Network *...many others...*	

[Step 2]: Update Your NS Records:

[Step 3]: Result:

	DNS "A" Records with and without CDNs	
	illinois.edu (Likely No CDN)	**vis.cs.illinois.edu** (AWS CloudFront)
Google DNS:	192.17.172.3	13.226.31.84, 13.226.31.51, 13.226.31.92, 13.226.31.14
CloudFlare DNS:	192.17.172.3	52.85.61.45, 52.85.61.71, 52.85.61.96, 52.85.61.13
Yandex DNS:	192.17.172.3	143.204.231.6 , 143.204.231.51, 143.204.231.69, 143.204.231.21