Content Delivery Networks: Fundamentals
What are Content Delivery Networks?
What are Content Delivery Networks?

Architectures (nodes, interfaces)  +  Algorithms for content life cycle management

Content distribution
- Send content from their original sources to the caches

Request routing
- Route end-user request for content to content locations

Content acquisition/consumption
- Send content to end-user devices
What are Content Delivery Networks?

Architectures (nodes, interfaces) + Algorithms

Ultimate goal: Make trade offs between

End – User QoS / QoE, e.g
- Latency
- Video resolution

Cost, e.g.
- Cost for storing content in caches
- Network cost for content distribution / acquisition
Traditional Content Delivery

**Content Provider Domain**
- Origin Server

**CDN Provider Domain**
- Surrogate Server 1
- Surrogate Server n
- CDN Controller

**End-user Domain**
- End-user Device

**Content Distribution**
1. Replicate Content
2. Request for Content
3. Redirect request
4. Deliver content

**Request Routing**
- Content Acquisition
Traditional Content Delivery Networks (Distinctive characteristics)

Traditional Web Technologies, e.g.
- Static resource allocation
Cloud Based - CDNs
What could Cloud CDN bring?

CDN goal: Trade offs between end-user QoS/QoE and cost

End-user QoS / QoE
- More flexibility in responding to end-user fluctuating demands
- Rapid provisioning of new value added services

Cost:
- Dynamic resource provisioning
- Pay per use
What could Cloud CDN bring?

Cloud CDN
(A few emerging commercial products)

Cloudflare
Rackspace
Amazon CloudFront
The End