Recitation 12 — CDNs

Motivation
● You saw CDNs in the previous lecture, in contrast to a client-server architecture and P2P networks. CDNs sit in the middle in terms of how distributed they are. Because they are run by for-profit companies, there are monetary incentives for CDNs to provide good performance.
● This paper is about a specific CDN: Akamai

What Akamai has to overcome
● Peering point congestion
● Inefficient routing protocols (e.g., BGP)
● Unreliable networks (failures, etc.)
● Inefficient transport protocols (e.g., TCP)
● Scalability
● Applications and customers don’t have a lot of control over the service level they can provide to their customers

Overview
● Design principles: reliability, scalability, limit human management, performance
● The delivery network consists of:
  ○ Mapping service
  ○ Edge platform (consists of edge servers)
  ○ Transport system (virtual network among edge servers)
  ○ Communications and control system
  ○ Data collection and analysis
  ○ Management portal
  ○ Transport protocols (not just TCP!)

Detail: Getting users to a server
● Uses DNS to map to cluster then server
● Based on locality of source IP address

Thought questions
● Some companies (e.g., Netflix) build their own “private” CDNs. Advantages? Disadvantages?
● Do you trust Akamai to deliver your content?
● If you were to design the Internet specifically for content distribution, how would you do it?