

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?