

Peer to Peer Applications: History

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History

- **Napster**: Music sharing system (mp3s) that popularized peer-to-peer networking
 - Based on centralized server (not pure P2P)
- Operated between June 1999 and July 2001; Peak user base in millions
- 12/99 first law suit; ran into many legal difficulties over copyright infringement
- Other file sharing systems took over

Gnutella

- First decentralized peer-to-peer system that enjoyed large popularity
 - Distributed architecture makes it difficult to pull the plug
- March 14, 2000: released by AOL but immediately withdrawn due to legal concerns; became open source thereafter
 - Underwent many iterations; many client variants available to this day

- User base in millions; by late 2007 enjoyed an estimated market ^{file sharing} share of more than 40%;
- Post 2010, lawsuits on certain client variants caused notable drop in size of the network

KaZaA

- Introduced in March 2001; Combines strengths of Napster and Gnutella; Inactive since 2012
 - Imposes a two-tier hierarchy
- Used for sharing Mp3s, albums, videos, games
- Proprietary protocol (control data encrypted)
- User base in millions; more popular than Napster ever was
- Like others was target of many copy-right related lawsuits

BitTorrent

- Released by B. Cohen in July 2001
- Very Popular; extensively used to this day for file sharing
 - Responsible for 35% of all Internet traffic in Nov 2004
- Unlike others, focuses on efficient fetching not searching
- Many users:
 - Blizzard entertainment to distribute games/patches
 - UK government to distribute tax information
 - Research institutes to share scientific data
 - Facebook to distribute updates among its servers

Summary

- Peer to Peer systems support a wide range of applications; were extremely popular in the 2000s
- P2P systems are based on overlay networks
- Two types of overlays: unstructured and structured
- Need to support 4 primitives: join, publish, search, fetch
- Many systems designed: Napster, Gnutella, KaZaA, BitTorrent