CLOUD COMPUTING CONCEPTS

with Indranil Gupta (Indy)

P2P SYSTEMS

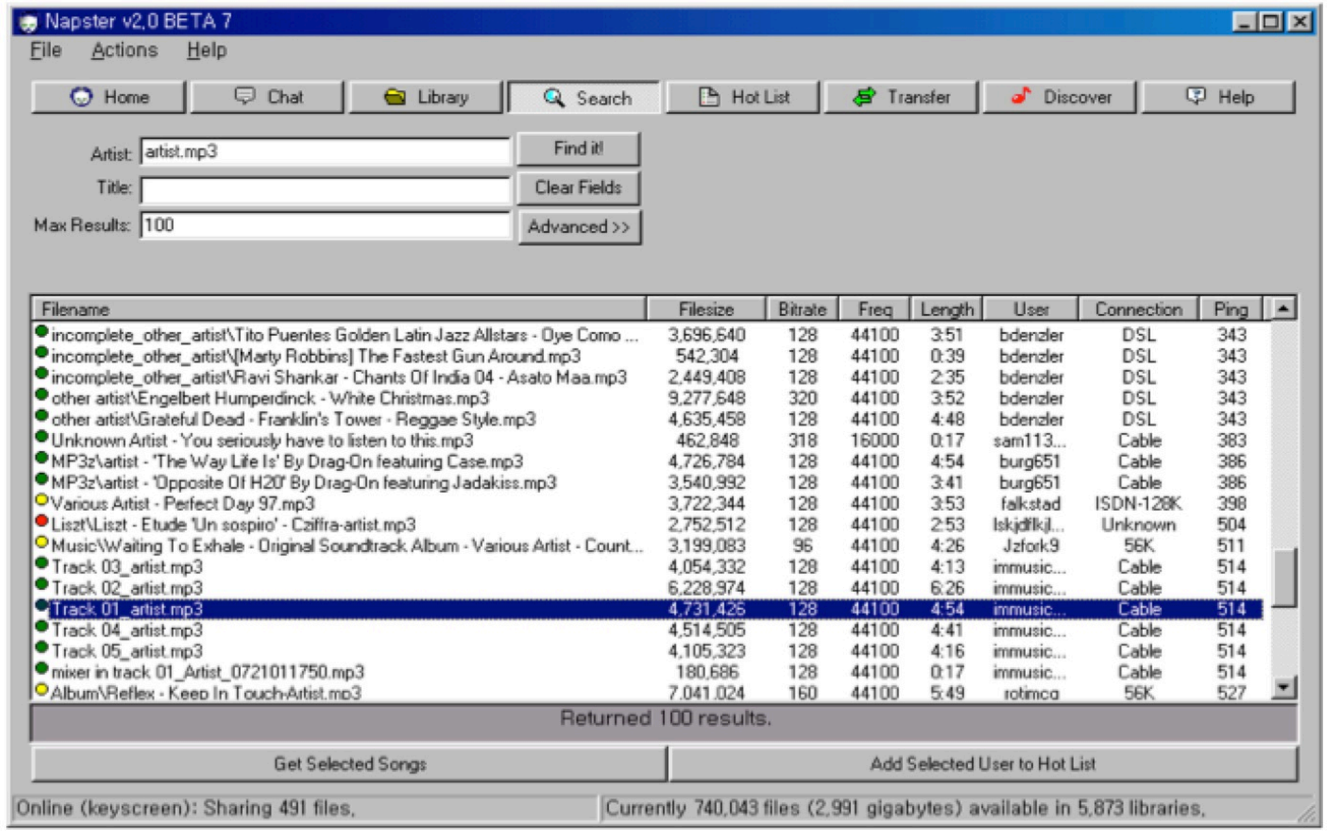
Lecture A

INTRODUCTION

Why Study Peer-to-Peer Systems?

- First distributed systems that seriously focused on scalability with respect to number of nodes
- P2P techniques abound in cloud computing systems
    - Key-value stores (e.g., Cassandra, Riak, Voldemort) use Chord p2p hashing

Why Study Peer to Peer Systems?



A Brief History

- [6/99] Shawn Fanning (freshman Northeastern University) releases Napster online music service
- [12/99] RIAA sues Napster, asking $100K per download
- [3/00] 25% University of Wisconsin traffic Napster, many universities ban it
- [00] 60M users
- [2/01] US Federal Appeals Court: users violating copyright laws, Napster is abetting this
- [9/01] Napster decides to run paid service, pay % to songwriters and music companies
- [Today] Napster protocol is open, people free to develop OpenNap clients and servers `http://opennap.sourceforge.net`
  - Gutella: `http://www.limewire.com (deprecated)`
  - Peer-to-peer working groups: `http://p2p.internet2.edu`

What We Will Study

- Widely-deployed P2P Systems
  1. Napster
  2. Gnutella
  3. Fasttrack (Kazaa, Kazaalite, Grokster)
  4. BitTorrent
- P2P Systems with Provable Properties
  1. Chord
  2. Pastry
  3. Kelips