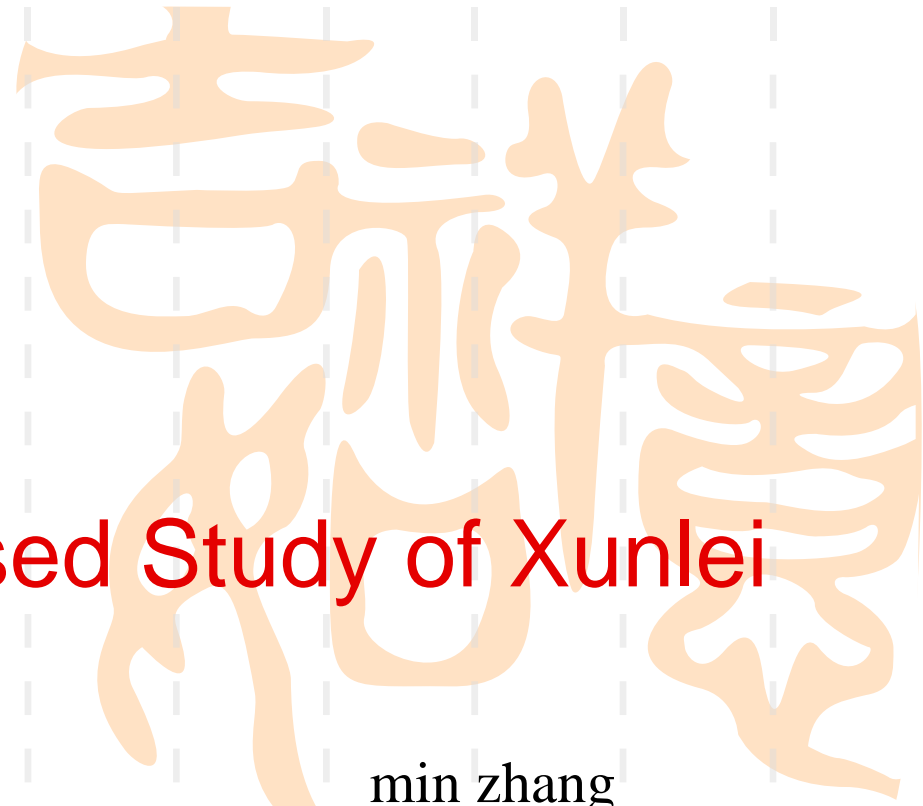# A Measurement-Based Study of Xunlei

min zhang

changjia chen

nevil brownlee

What is Xunlei??

- Xunlei, 迅雷, Thunder

- A P2P application, currently mainly used in China
  - integrate other open P2P file-sharing system;
    (BitTorrent, eDonkey, Kad)
  - IPTV

What is Xunlei??

- How popular?
  - user number:

    over 80 million users (Wikipedia)

    1,880 million users (Xunlei site)
  - region limitation:
    - no official English version
    - only runs on Windows machines

Outline

- Introduction

- Experiments

- Results

- Future works

Experiments

- Tools: Wireshark
- Two kinds of experiments:
  - Xunlei's architecture
  - Xunlei's behavior in downloading file from sites

- Our analysis based on: source and destination IP addresses, protocol, data bytes on packet level

Results-- architecture

- Xunlei system: servers + clients

  - Xunlei servers cooperate effectively with clear-cut divisions of work

    client initialization, advertisement, file index, virus scan, pictures store.

  - In eDonkey network, each server is mainly in charge of indexing files for clients
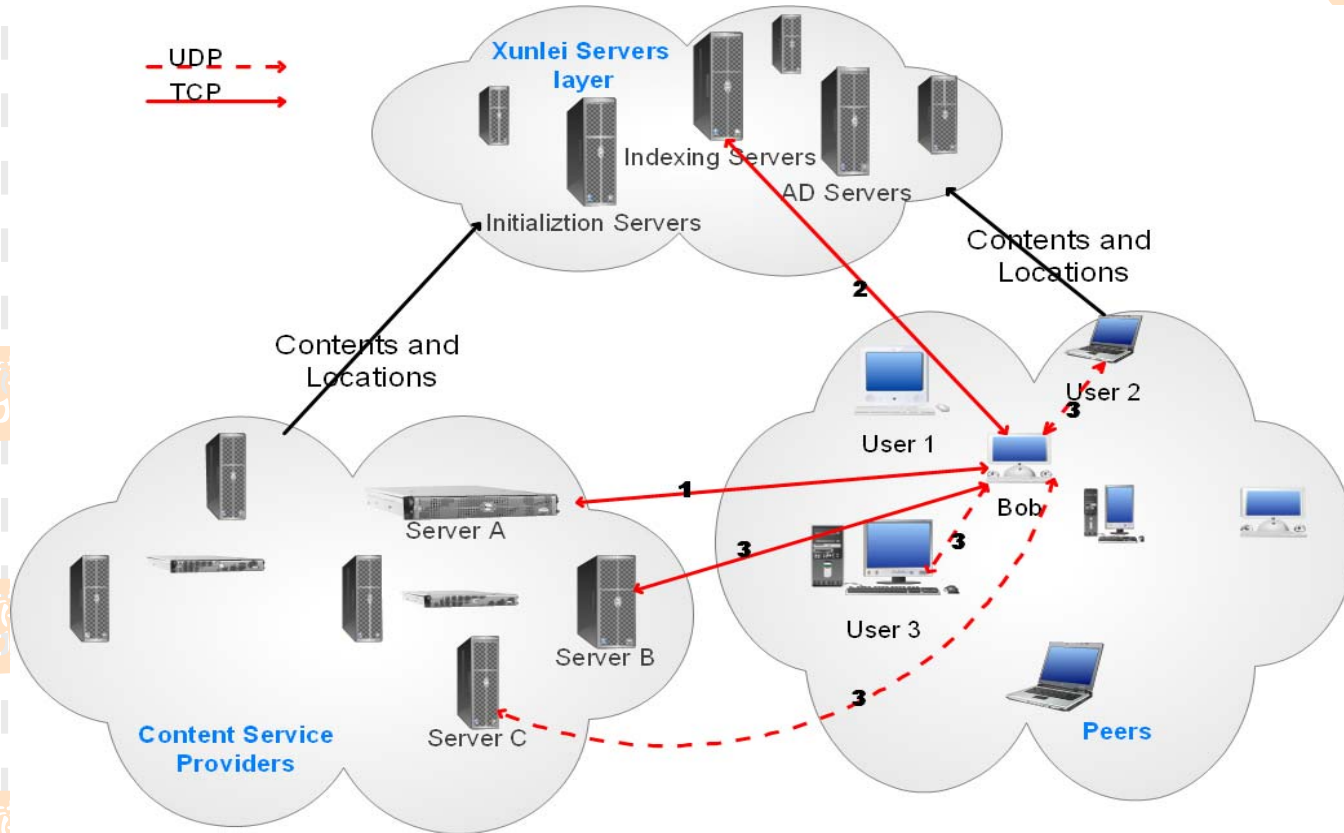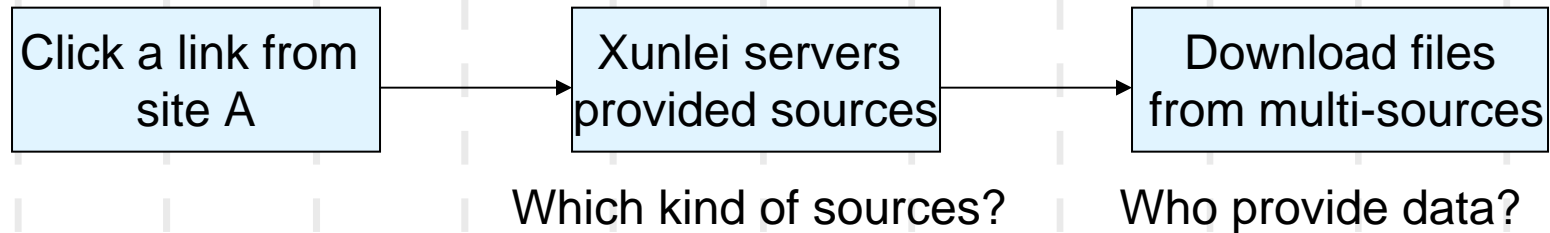
Results-- architecture
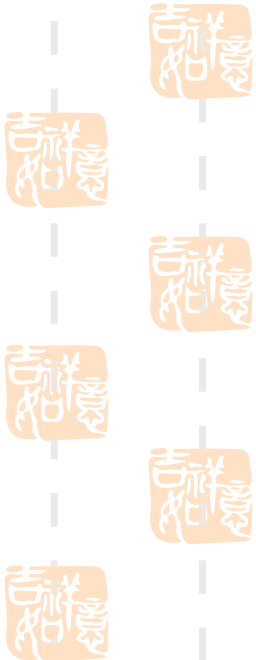

Figure 1: Diagram of Xunlei System

Results—evaluation of downloading

Click a link from site A	→	Xunlei servers provided sources	→	Download files from multi-sources

Which kind of sources?   Who provide data?

Sources:
- Clicked servers
- Unclicked servers
- peers

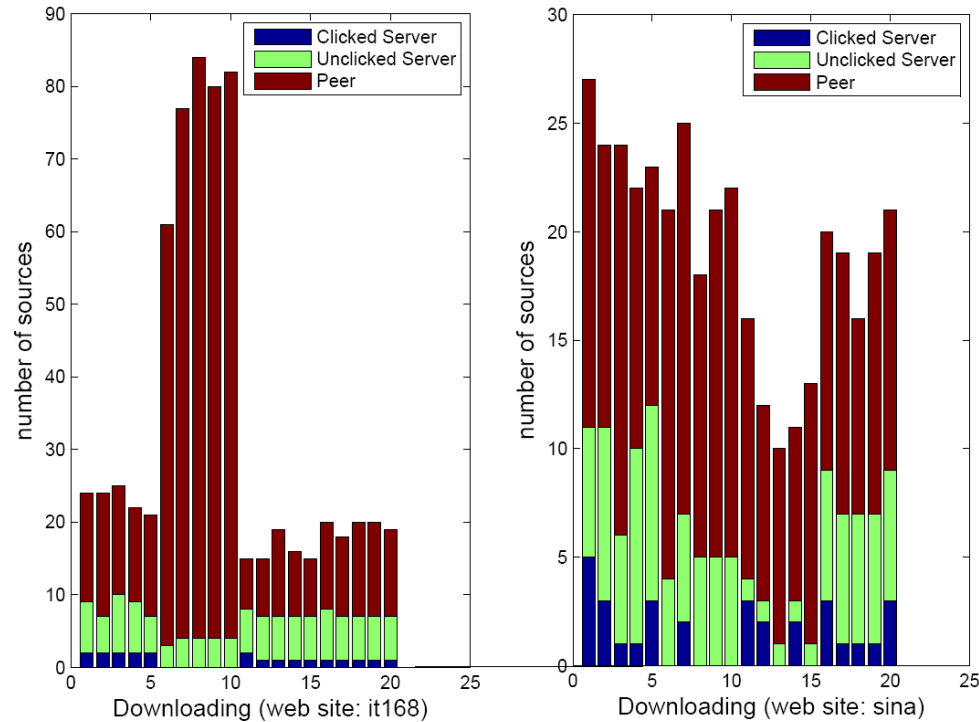# Results—evaluation of downloading

Figure 2: Number and types of sources Xunlei clients use to download data (forty experiments each to two portals sites)

Results—evaluation of downloading

- Data redundancy:
  - Xunlei client downloads files from several sources; duplicate data?
  - Calculate the data redundancy for each download.
  - The results show that Xunlei's parallel downloading using its multi-sources manager works effectively for downloading from numerous sources

Results—evaluation of downloading

- **Inappropriate behavior:**
  - Xunlei's behavior of downloading files from unclicked servers is arguably inappropriate, as it exploits the advertisement profits those servers would receive via true clicks, page view hits, etc.
  - It balances loads among servers from the view of the whole Internet.

Future works

- Explore Xunlei's other aspects:
  - ➤ IPTV
  - ➤ Bulk-file sharing
  - ➤ Compatibility with uTorrent and eMule

- Design a business-driven information integration for making good use of Internet.

- Any Questions?