Peer-To-Peer Applications

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Outline

- Transferring big files
  - client-server vs. peer-to-peer
- BitTorrent
- Peer-to-peer search
- Miscellaneous

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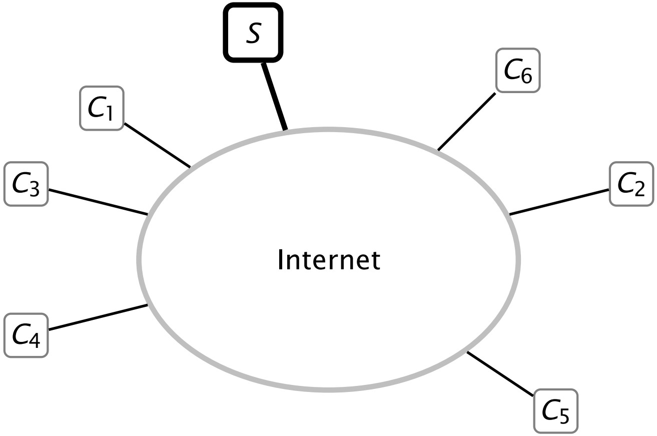
- How long does it take to transfer a *big* and *very popular* file?
  - N clients want the file

Transferring Big and Popular Files



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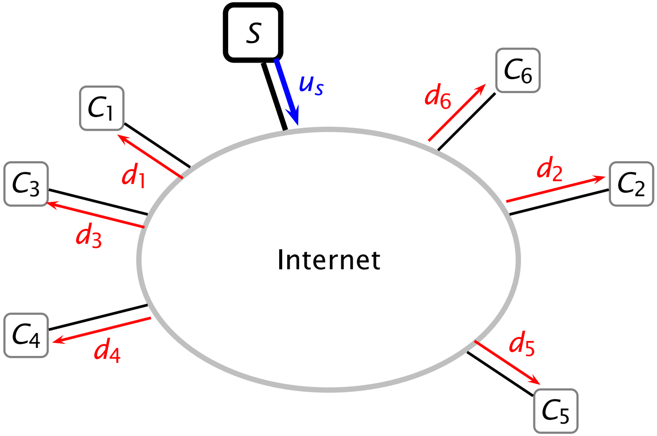

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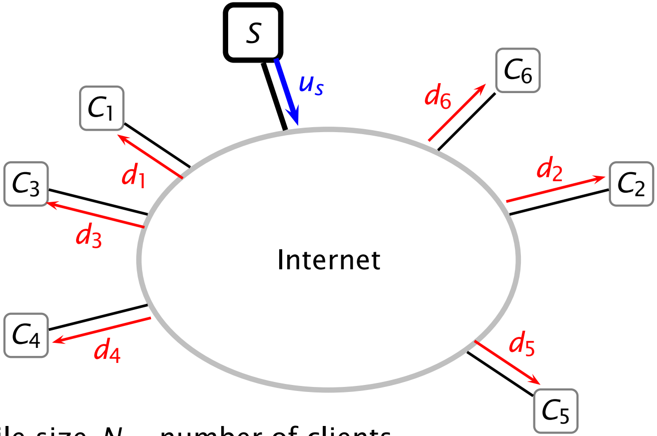

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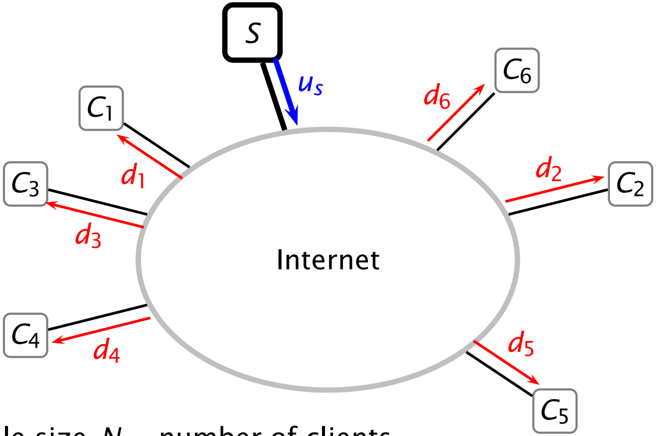

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$$T_{CS} \geq \max\left(\frac{NF}{u_s}, \frac{F}{d_{min}}\right)$$

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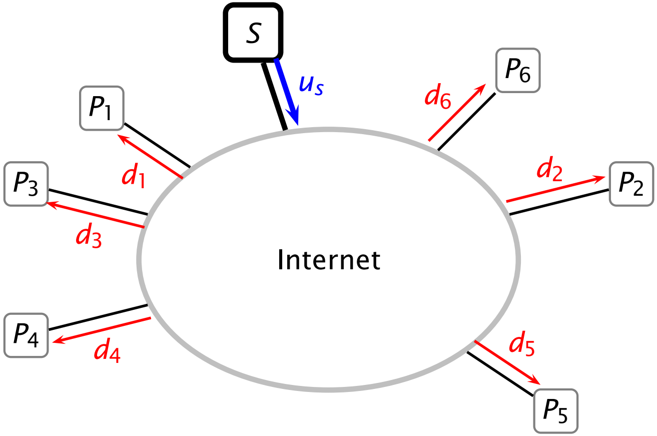
3. The clients exchange blocks using “peer-to-peer” connections

Transfer Time with P2P Connections



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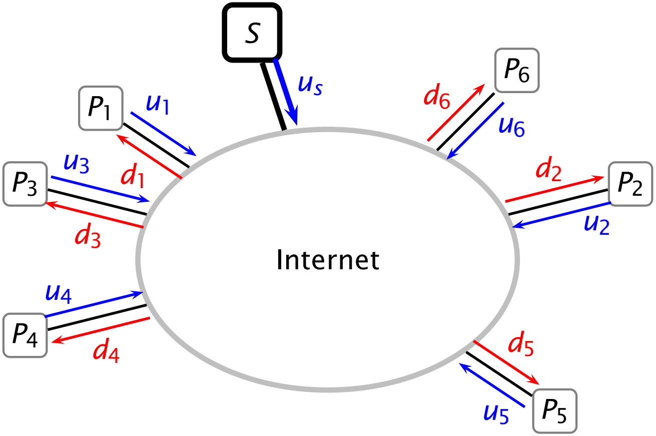

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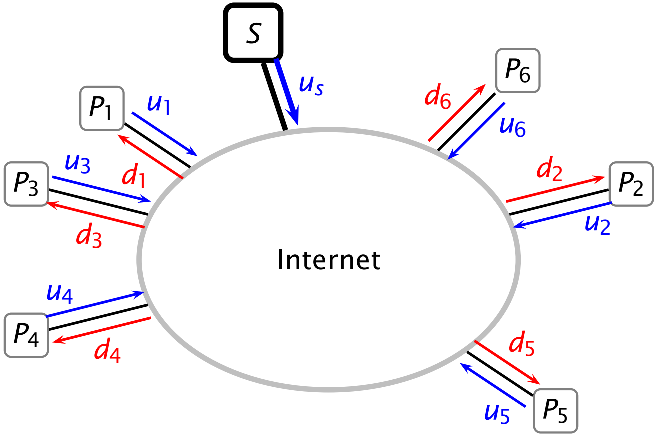

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The transfer time does not depend on the number of receivers!

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- The torrent (one or more files) is split into *equal-size chunks*
  - peers accumulate chunks and keep track of the chunks they have
  - it might be that no single peer has all the chunks, as long as all the chunks are available from *some* peer

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    - periodically, Alice also selects another trading partner at random (why?)

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- And much more: chat, audio/video codecs, multi-party communication, etc.