

Peer-To-Peer Applications

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

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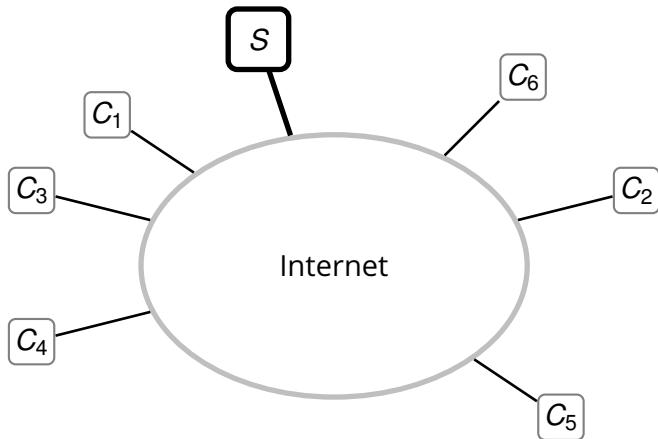
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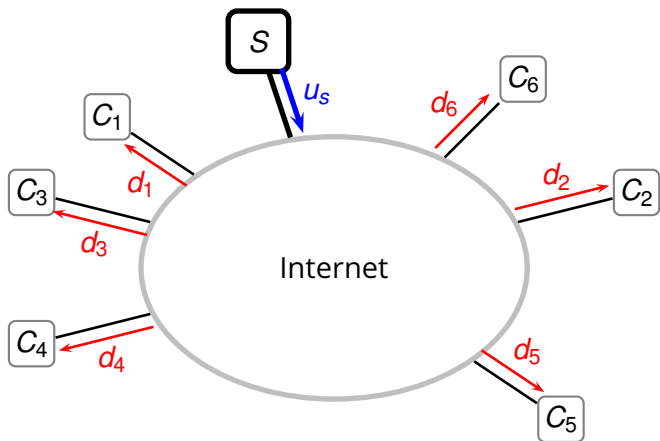
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- How long does it take to transfer a *big* and **very popular** file?
 - ▶ N clients want the file

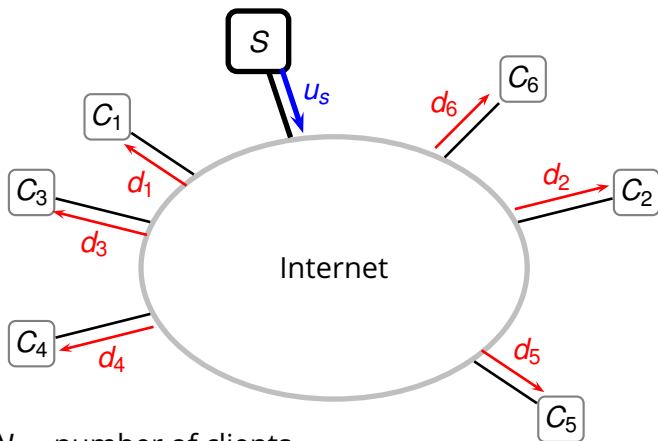
Transferring Big and Popular Files



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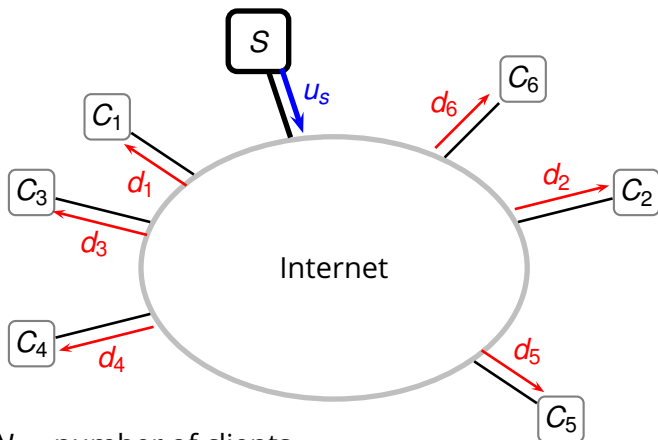
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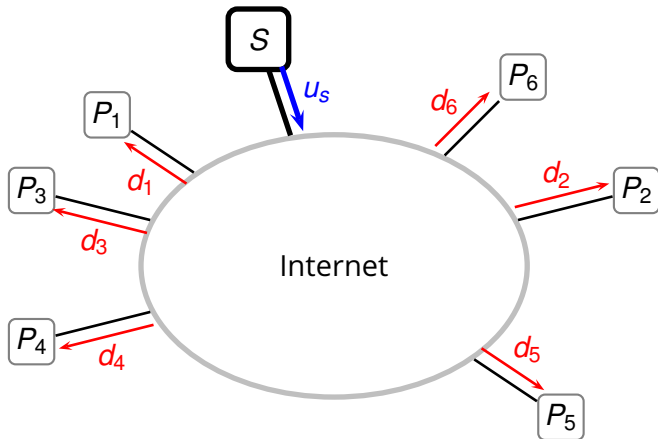
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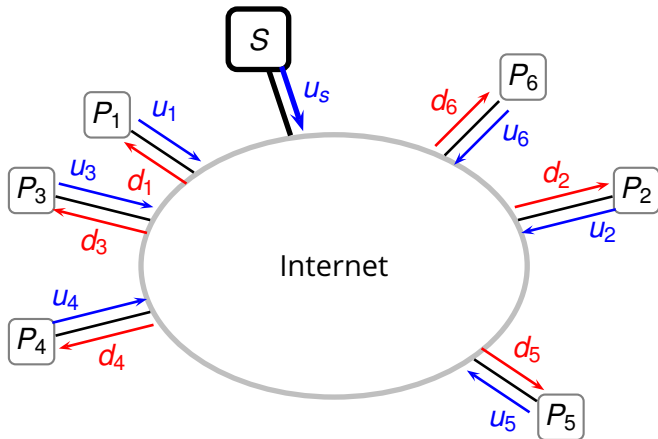
Exploiting Peer-to-Peer Connections

1. Split the file into *blocks*
2. The server sends different blocks to different clients
3. The clients exchange blocks using “peer-to-peer” connections

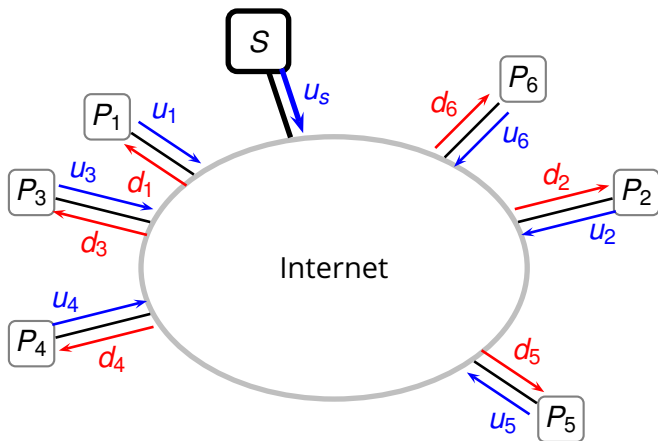
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The transfer time does not depend on the number of receivers!

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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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 - ▶ Alice figures who has what chunks, and therefore requests some chunks from her neighbors
 - ▶ Alice requests the *rarest chunk first* (why?)
 - ▶ Alice also receives requests from her neighbors
 - ▶ Alice gives priority to neighbors that share the most (highest rate): she sends her chunks to the top four (why?)
 - ▶ periodically, Alice also selects another trading partner at random (why?)