Cyclical Repetition of Data

Schiller, Section 6.2

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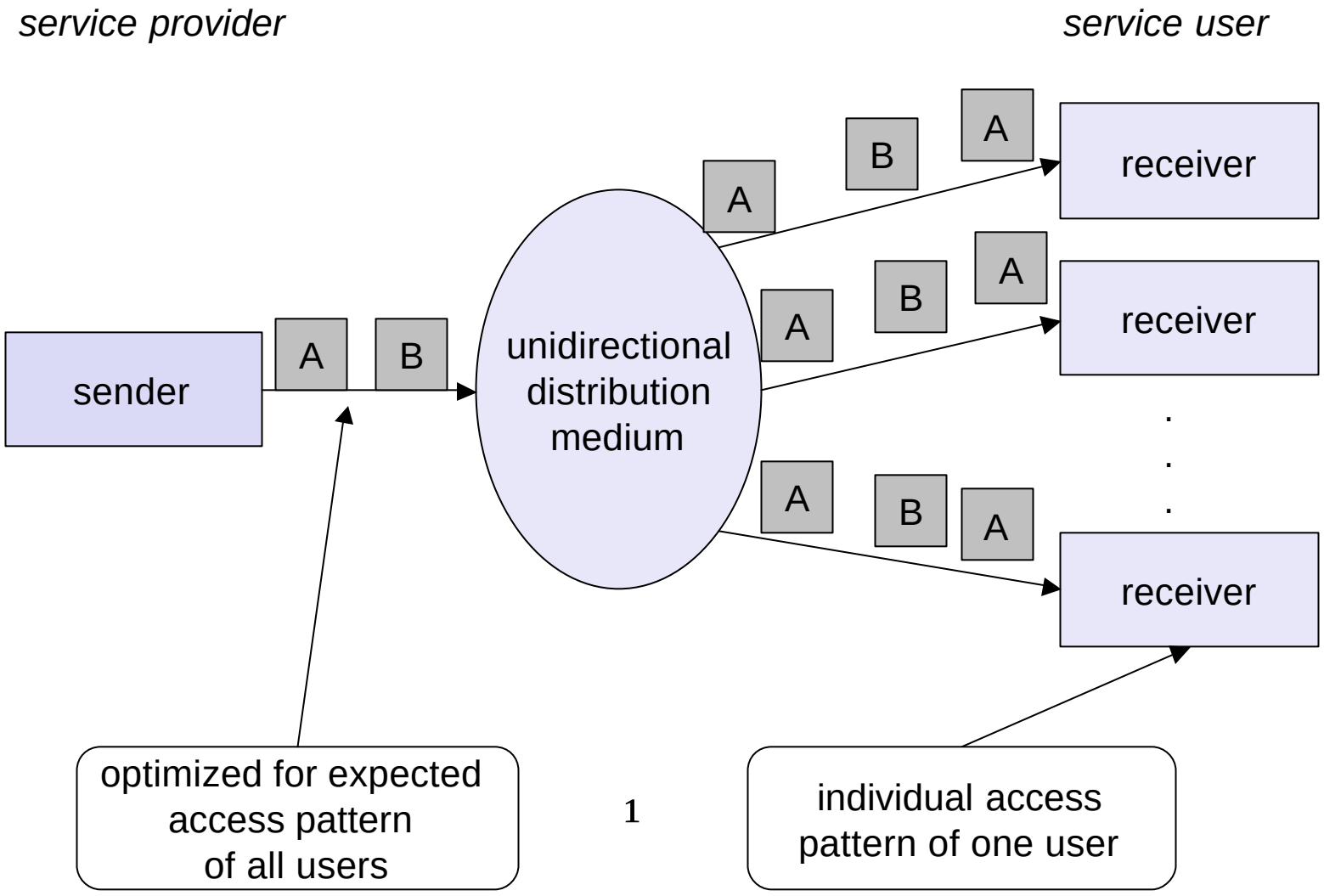
Broacast Disks

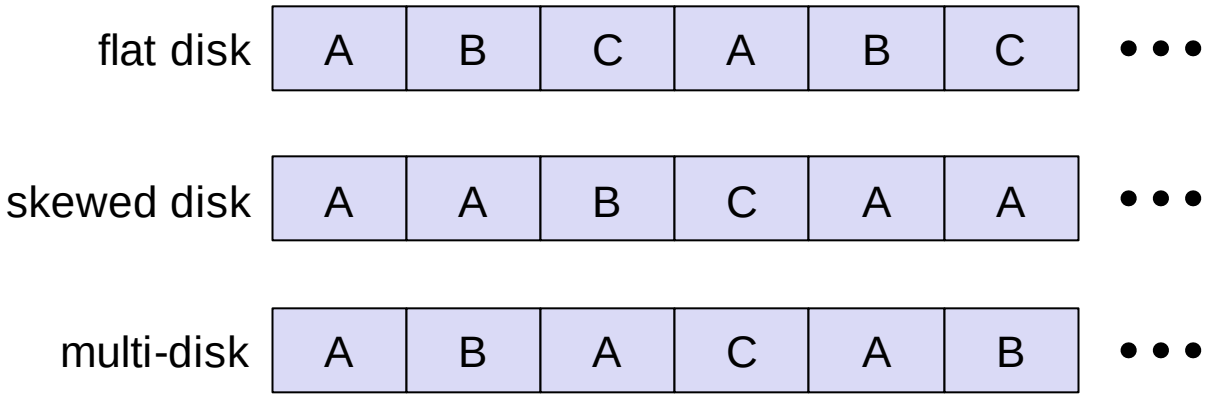
- **Asymmetric communication environments**
  - **Assymetric bandwidth**
  - **Assymetric information access patterns**
- **Data-specific optimizations**
  - **Client-server**
  - **Server *pushing* information**
  - **Broadcast disks abstraction**
- **Broadcast disks**
  - **Possible only if knowledge of *data content* + *access patterns***

Unidirectional distribution



Structuring transmissions: broadcast disks

- **Sender**
  - **cyclic repetition of data blocks**
  - **different patterns possible**



- **Receiver**
  - **use of caching**
    - **cost-based strategy: costs of user waiting if requested block is not cached**
    - **To optimize, application and cache have to know:**
      - **data content + and user access patterns**

Broadcast disk example

- **Radio station transmitting**
  - **Block A: road conditions**
  - **Block B: weather report**
  - **Block C: latest events in town**
  - **Block D: Menu to access topics + music**
- **May Generate: *DADBDADCDADBDADC***
- **Client program may add caching if user:**
  - **town events in evening => cache block C for evening**
  - **road conditions in morning => cache blk A in morning**

Original paper

- S. Acharya, R. Alonso, M. Franklin, and S. Zdonik, "Broadcast Disks: Data Management for Asymmetric Communication Environments," Proceedings of ACM SIGMOD'1995.
- S. Acharya, ""“Broadcast Disks”: Dissemination-based Data Management for Asymmetric Communication

  Environments," Ph.D. Thesis, Brown University, 1997.
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  - More networking now