Cyclical Repetition of Data

Schiller, Section 6.2
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Broadcast Disks

- Asymmetric communication environments
  - Asymmetric bandwidth
  - Asymmetric 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

service provider

sender

unidirectional
distribution
medium

optimized for expected
access pattern
of all users

≠

individual access
pattern of one user

service user

receiver

receiver

receiver

receiver
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

- Swarup Acharya
  - @ Lucent labs, NJ
  - More networking now