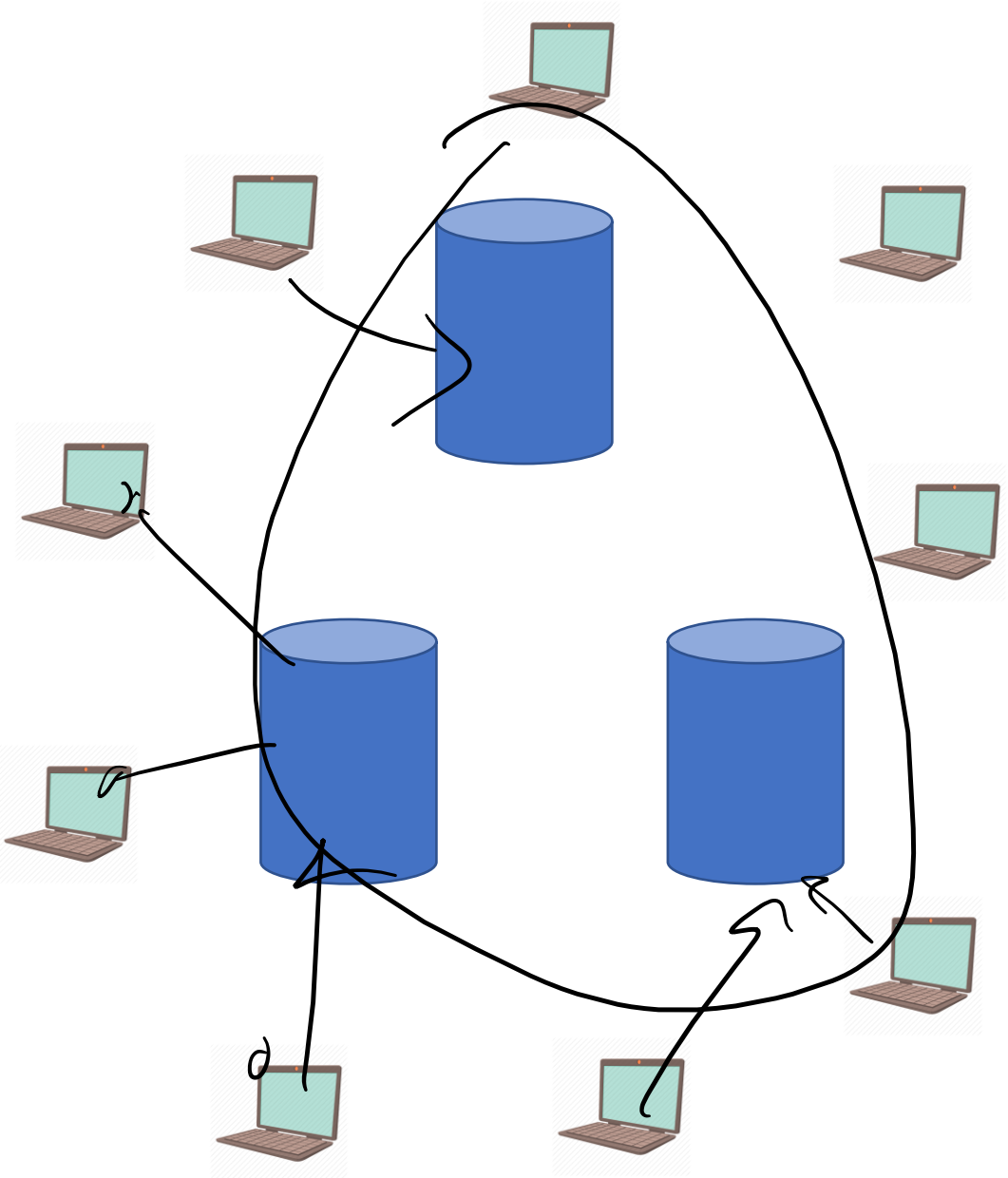
AFS

Goals of AFS

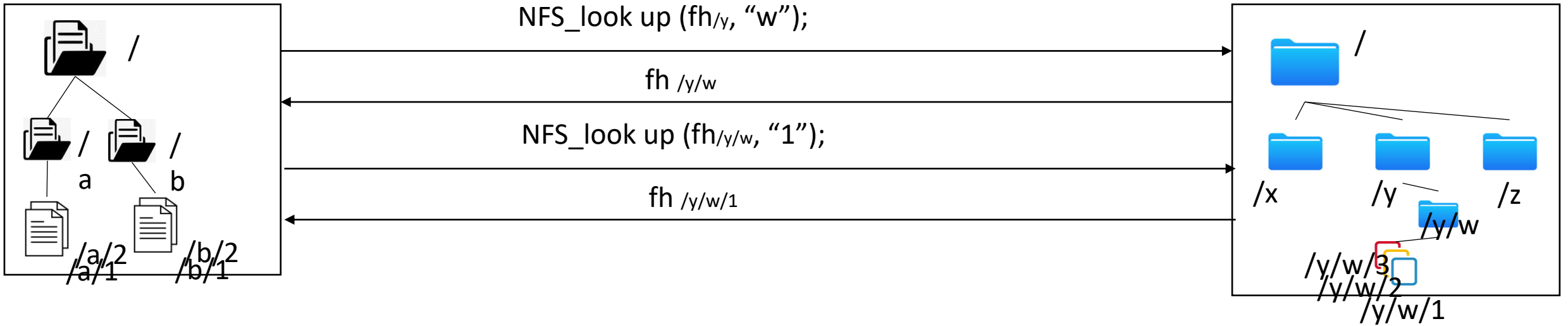
- File sharing in large institution
- No change to OS!
- Scalability is very important



How to get AFS work without changing OS?

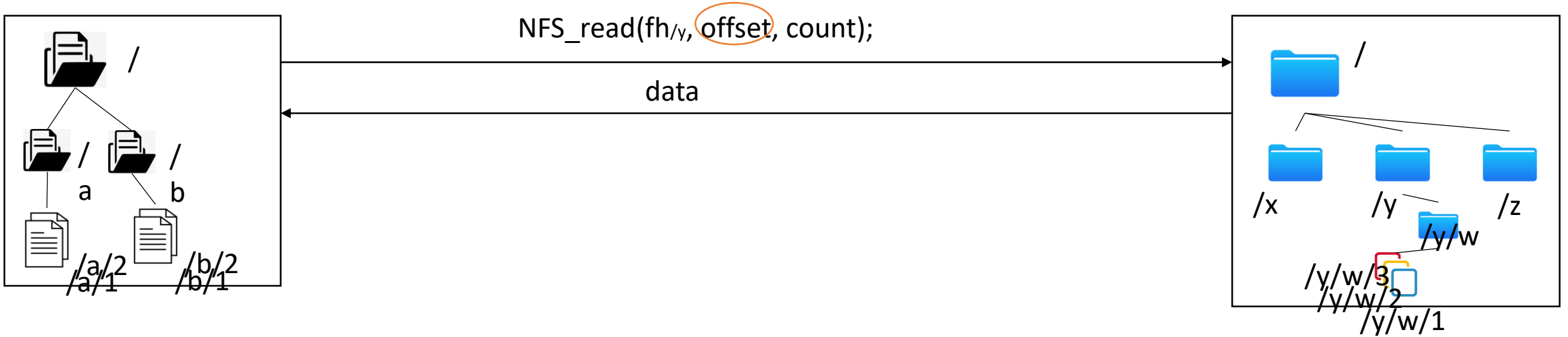
Where did NFS change OS?

- Open (“/b/w/1”, …)



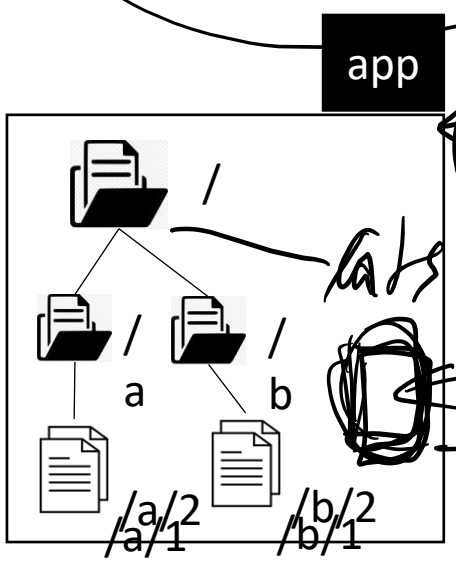
Where did NFS change OS?

- read (fd, …)



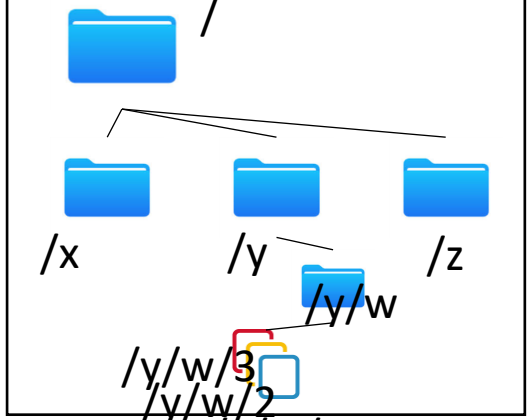
How to open a file without changing OS?

Open file table



app

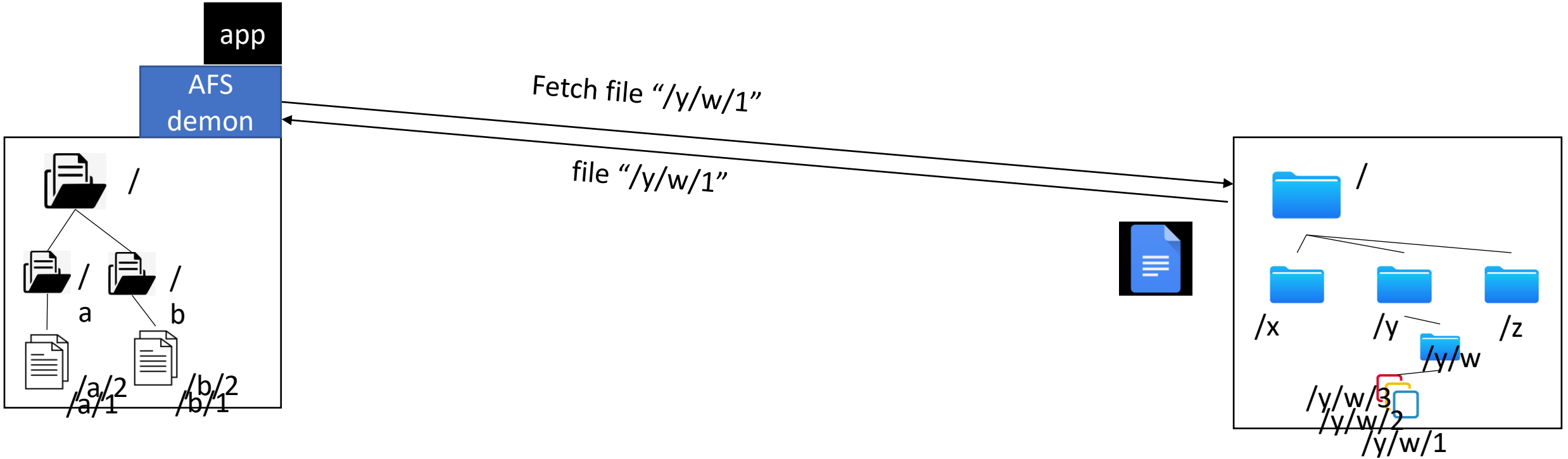
AFS daemon



How to open a file without changing OS?

- Open (“/b/w/1”, …)
  - AFS demon checks prefix
  - AFS demon gets **whole** file from server
  - AFS demon saves the remote file to local disk

Open file table



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What is the return?

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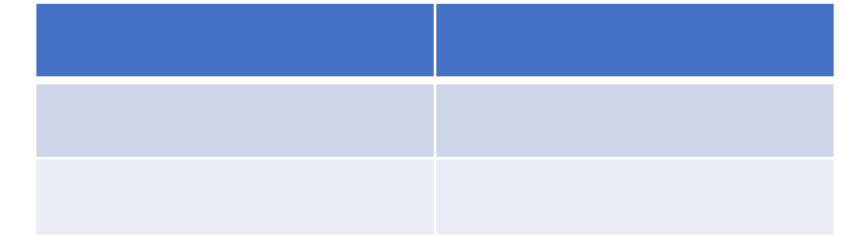
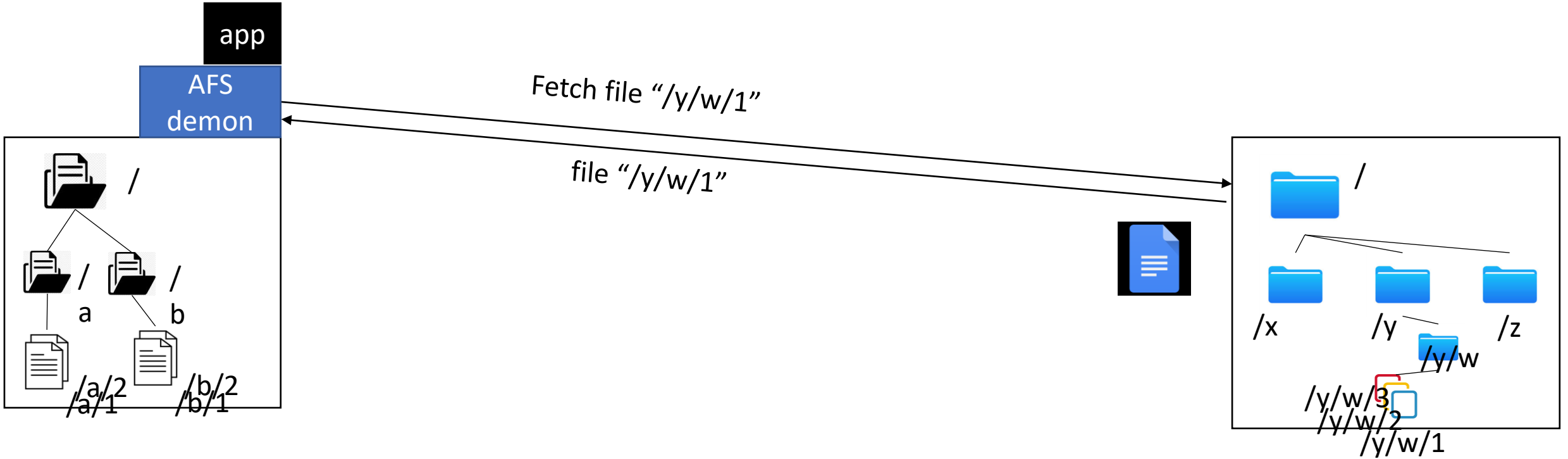
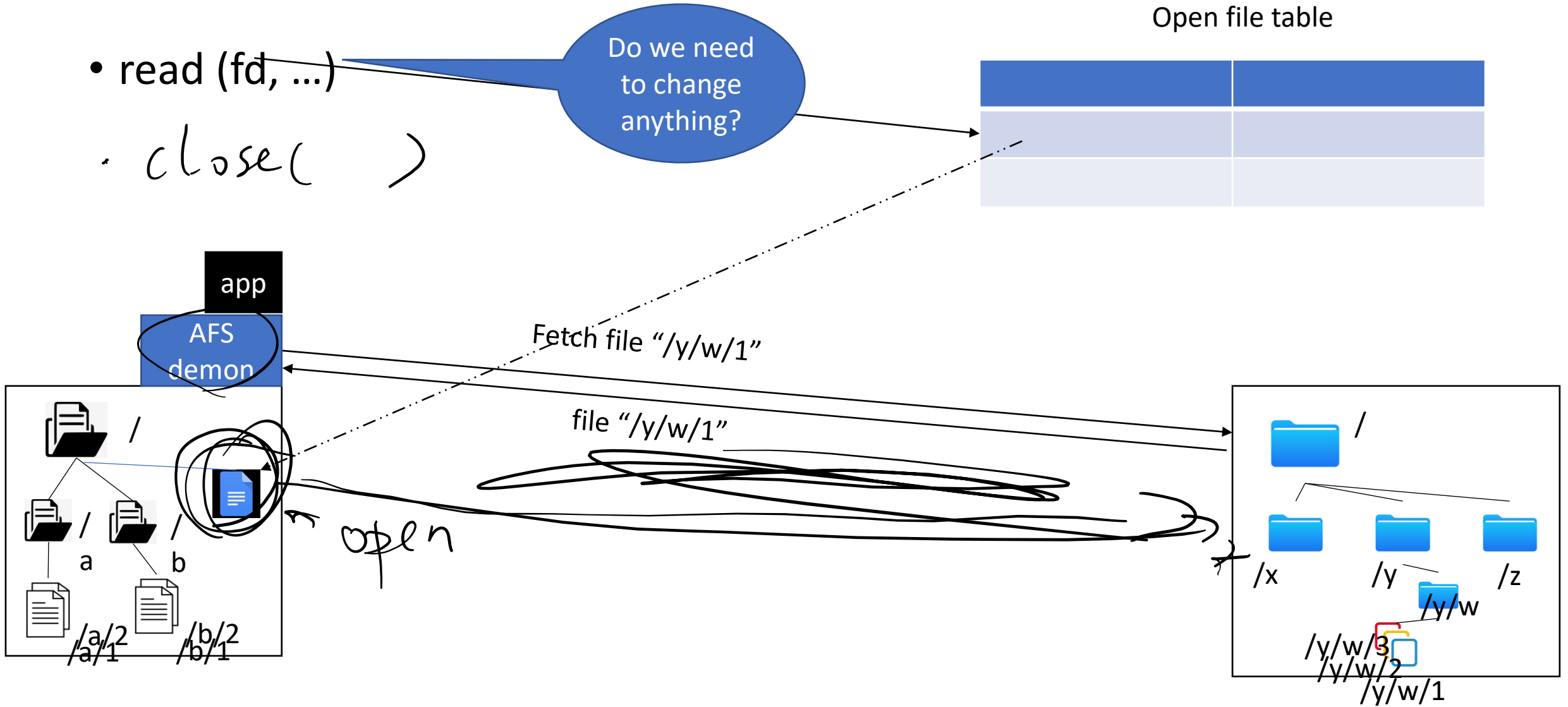
Open file table





How to read a remote file without changing OS?

- read (fd, …)
- close( )



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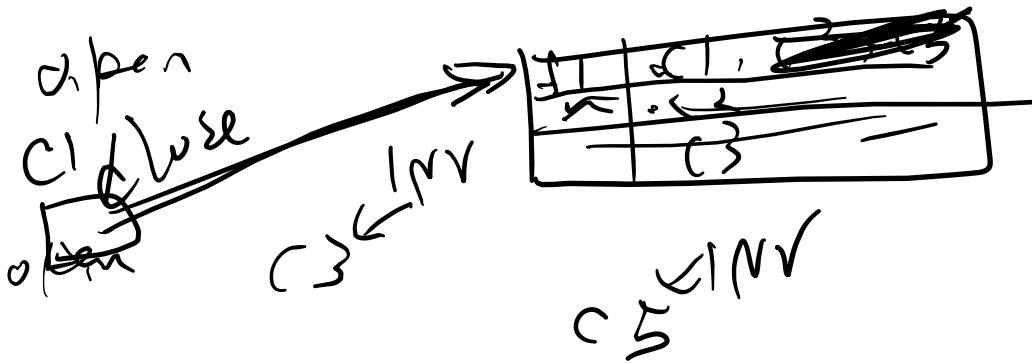
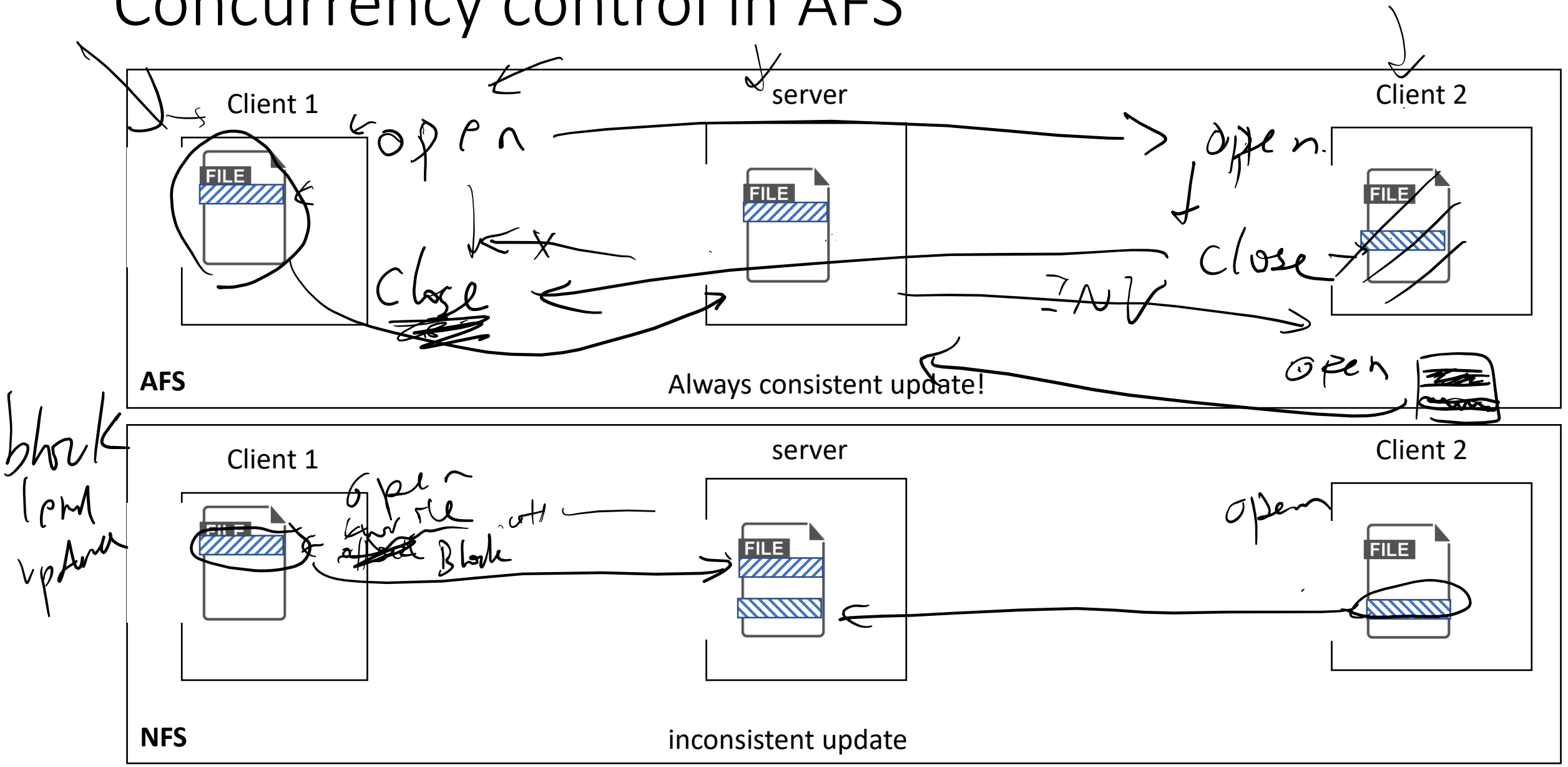
Performance in AFS

- Is open fast?
- Is read/write fast?
- Can we use caching to improve performance?
  - Yes, whole file cache
  - When to invalidate a file?
    - Option 1: ask the server before opening the file
      - Stateless server
      - Slow (too many “asking state” messages)
    - Option 2: only invalidate when the server tells me to
      - Stateful server
      - Fast (much fewer “asking state” messages)



Concurrency control in AFS



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