Save and Upload Improvements & Architecture
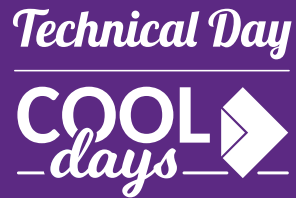
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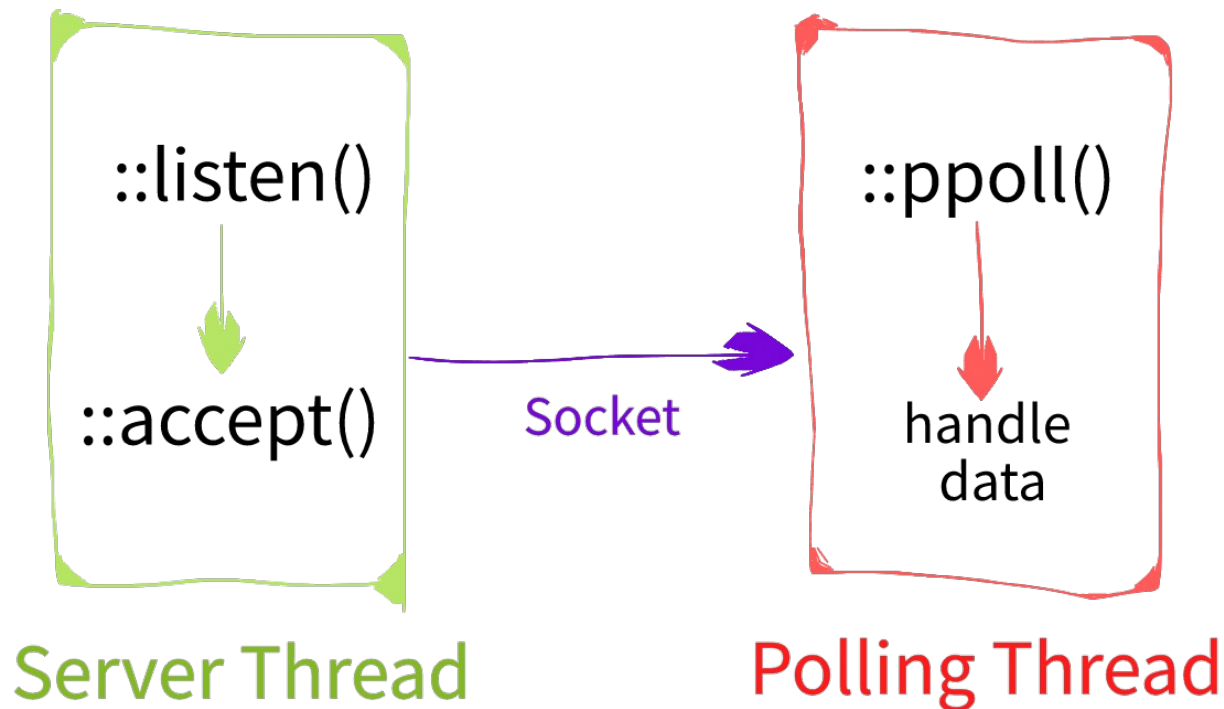# Background

Asynchronous Saving and Uploading

- Built on asynchronous sockets

- Shared socket polling, reducing overheads

- Reusable sockets

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Low-Overhead Design

::listen()

::accept()

Socket

::ppoll()

handle data

Server Thread

Polling Thread

- One ppoll syscall
- One thread
- High scalability

Improvements

Better Edge-Case Handling

- Last-client disconnection on document with conflict
  - Relies on Document Quarantine
- Track and report save and upload failures
  - Cap retry logic based on number of failures
- Optimizations to avoid excessive retrying upon failure
- Faster document unloading and reloading
- Better statistics and diagnostics
- New configuration settings

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Timing-Sensitive Issues

Saving and Editing in Parallel

- Track modifying user activity to prevent closing immediately after saving

- New logic to track storage properties

    - Retrying failed upload attempts do not lose prior properties

    - Resolves a number of uncommon, but important, issues

    - Multiple edge-case improvements

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Hardening

Validating and Preventing Regressions

- A host of new tests added specifically to create the issues resolved

- Improvements to the testing framework to be more capable, reduce false positives and negatives

- Stricter tests

- More Fuzzing to discover unknown issues

Thank you!

By Ashod Nakashian

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