

# ResShare

*Decentralized Cloud Storage Built on ResilientDB and IPFS*

Team Members: Jiazhi Sun, Devang Borkar

Professor: Mohammad Sadoghi

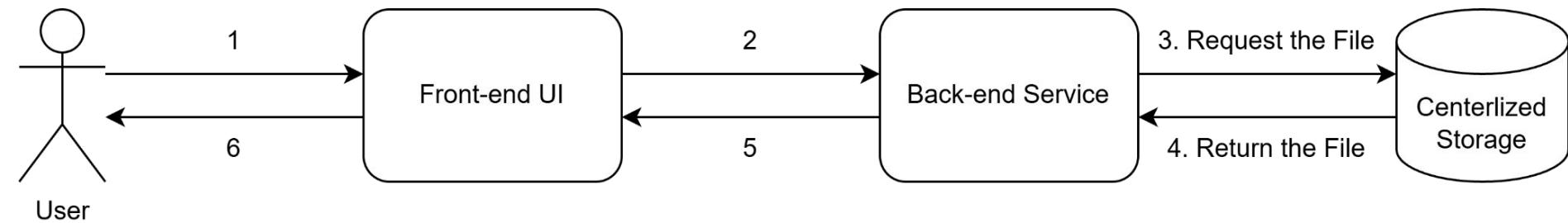


Apache  
**ResilientDB**  
Incubating



**UCDAVIS**

# Cloud Storage Service Right Now



# Motivation

## Overcoming Centralized System Limitations

Centralized servers are prone to **security vulnerabilities**, **data breaches**, and **single points of failure**.

Sensitive information lacks the protection needed in critical industries like healthcare and finance.

## Why Decentralization?

**Utilizing Everyone's PC:** Utilizing everyone's PC free storage

**Enhanced Security:** ResShare ensures data integrity and prevents unauthorized modify access without consensus across nodes.

**Resiliency:** No central authority eliminates single points of failure, ensuring uninterrupted access.

**Privacy:** Self hostable and complete control over the network

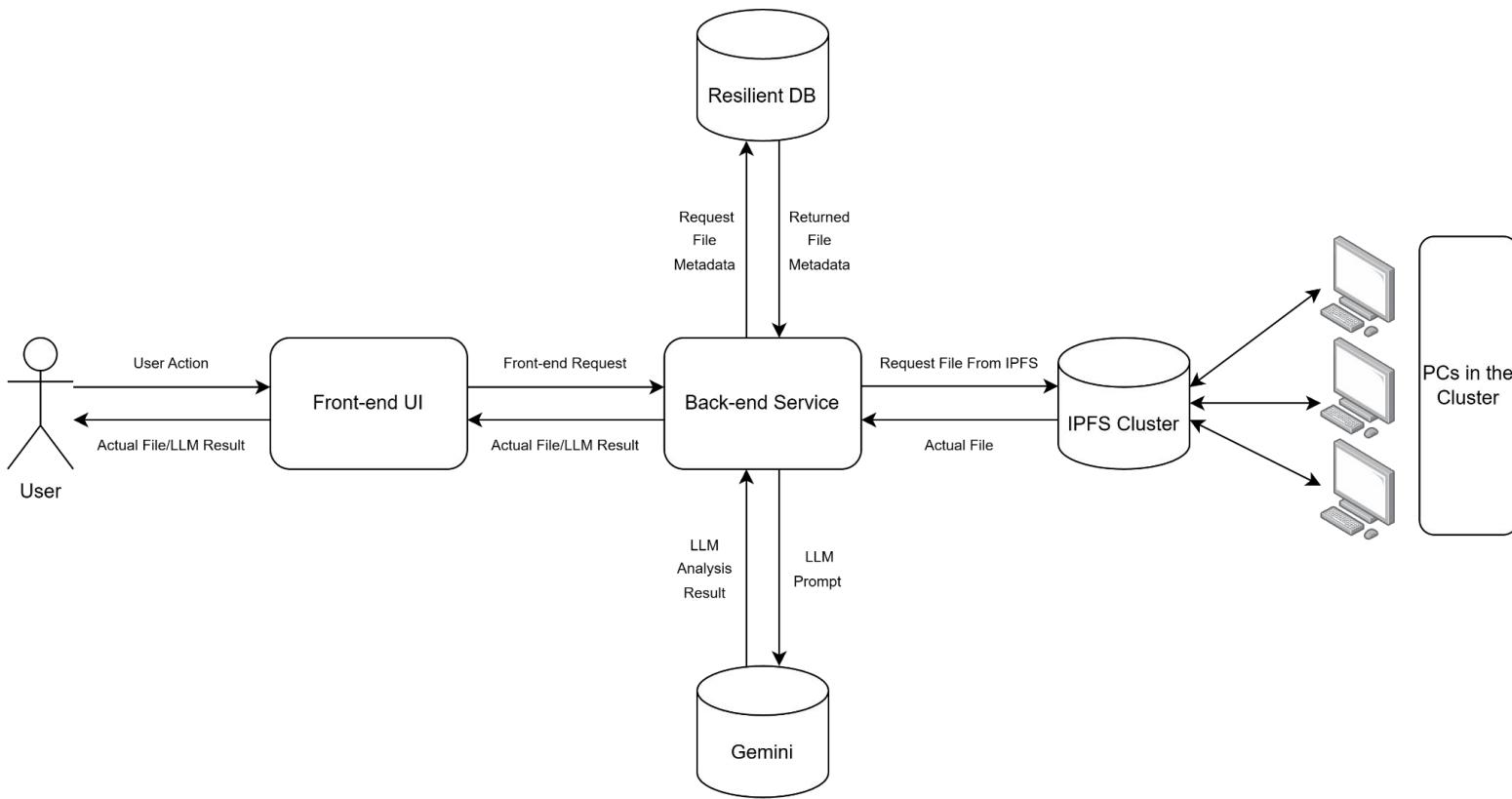
# Back-End Tech Stack

1. **ResilientDB:** A blockchain based decentralized key-value database to store the file metadata and user information
2. **IPFS Cluster:** A decentralized file storing method
3. **Python & Flask:** Back-end logic is written Python and back-end front-end communication is build with Flask framework.
4. **AES + RSA Encryption:** Every single file is encrypted with a randomly generated AES key and this AES key is encrypted by user's RSA public key

# Front-End Tech Stack

1. **React + React Router:** A fast single-page experience with protected navigation across Login, Home, Explorer, and AI Chat.
2. **Material UI + Emotion:** modern, responsive UI system with reusable components and seamless light/dark theming.
3. **Context API + Custom Hooks:** Centralized app state and clean, reusable logic for auth, notifications, downloads, and context actions.
4. **API Layer + Testing Stack:** Robust frontend-backend communication with session-aware requests, unified error handling, and React Testing Library for reliability.

# Architecture Diagram - ResShare Deployable



# Links

- [Live Link](#)
- [ResShare Github](#)

# Contact

- [knysun@ucdavis.edu](mailto:knysun@ucdavis.edu)
- [dnborkar@ucdavis.edu](mailto:dnborkar@ucdavis.edu)