

Progress Presentation

P2POCKET

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Project Overview

P2Pocket?

- P2P storage sharing with mutual involvement
- Cost free storage alternative
- Optimized utilization of network storage resources
- P2P network and Kademlia

System design

- **Kademlia(DHT):** Efficient node lookup and file retrieval
- **File splitting:** Separation of larger file into smaller chunk (100B for testing purpose)
- **File hashing:** Creation of key for chunk to store in network and file verification in retrieval process
- **Encryption:** Security feature to ensure data privacy
- **Holepunching:** To add node behind the NAT
- **Interactive GUI:** To simplify user experience

TASK COMPLETED

Kademlia Implementation

- Successfully integrated Kademlia protocol.
- Incorporated node identification, routing, and lookup mechanisms via RPCs.
- File storage and retrieval is done on top of overlay network.

Functionality Highlights

- Implemented functionalities for node joining, routing table maintenance, and content retrieval.
- Effective scaling and handling of a large number of nodes.

File Splitting and Hashing

- Developed pragmatic approach for file segmentation and cryptographic hashing.
- Each file is splitted into pieces of fixed size(100 bytes).
- Piece content is hashed to generate content id of 160 bits.

Hashing Mechanism

- SHA1 algorithm for content hashing.
- The generated 160 bit hash is used as key in the network.

File Storing

- Each file is stored across multiple nodes(3).
- A filesystem is created that keep tracks of files stored in the network.
- For each file in the network, a metadata file stores the hash of all the pieces.

File Retrieval

- File can be retrieved by specifying the location in the filesystem.
- Each piece is retrieved using its hash.
- The content are then merged, and the file is persisted to the disk.

TASK REMAINING

- Encryption
- Hole punching
- Interactive GUI

THANK YOU