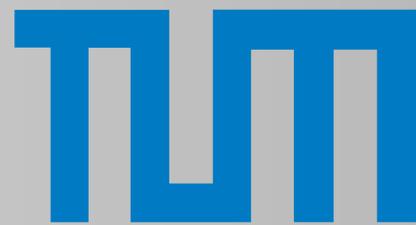


# IgorFs: A Distributed P2P File System

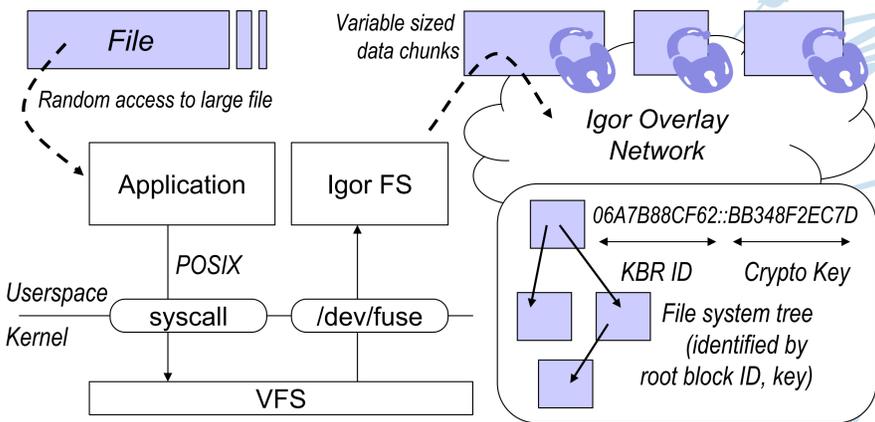
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## 1 Introduction:

We present IgorFS, a fully decentralized peer-to-peer file system. IgorFS operates on top of Igor, a structured P2P overlay network.



## IgorFs Main Features:

- 1 Fully Decentralized
- 2 Dynamic Block sizes
- 3 Completely Encrypted
- 4 PRS/PNS Support
- 5 Snapshotting Support
- 6 Publish/Subscribe Capabilities

## 5 Snapshotting Support in the File System:

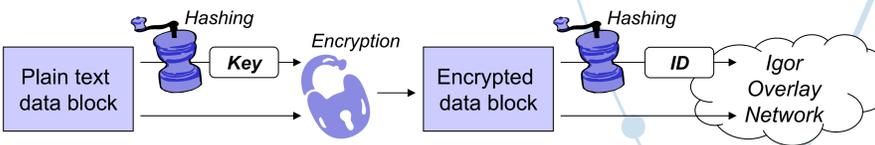
Each root-block revision in IgorFs offers a complete snapshot of the file system. When a change in the file system has happened, IgorFs writes a new root block. It can be used to access this snapshot.

## 6 Publish/Subscribe Mechanism:

IgorFs uses a publish/subscribe mechanism, which is based on the subset-difference revocation (SDR) method. SDR allows us to send encrypted messages which every authorized receiver but no revoked receivers can decrypt with very low overhead. The receivers are stateless, only the publisher has to track revoked receivers. Whole groups of users can be easily revoked.

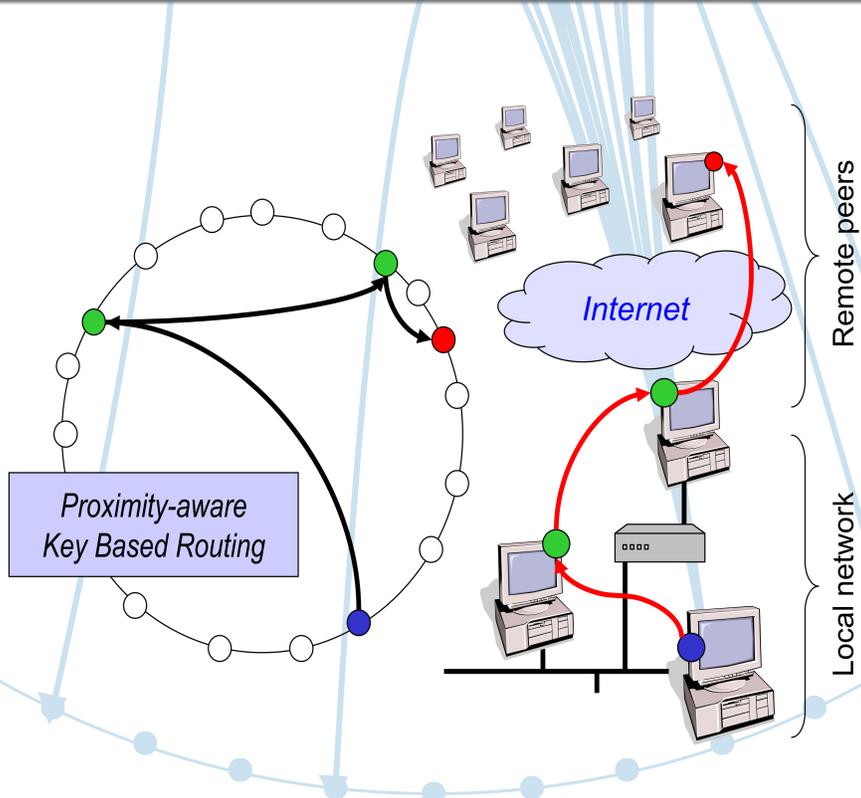
## 2 Dynamic Block Sizes:

IgorFS is mounted into the operating system. Files are split into blocks based on a rolling checksum. Thus, modifications to a part of a file affect only a few blocks. This particularly suits large, frequently updated files such as genome or protein data.



## 4 PRS/PNS Support in the Overlay Network:

Igor provides a key based routing service. Using proximity route selection (PRS) and proximity neighbor selection (PNS), Igor exploits the proximity of nodes in the underlying Internet topology.



## 3 Completely Encrypted:

Each data block in IgorFs is identified by a 256-bit unique identifier and encrypted with a 256 bit key. Both the ID and the key are obtained by hashing the block with a cryptographic hash function. Thus independent IgorFs instances map the same clear text block to the same cipher text block.

## Future development:

IgorFs and Igor are a subject of ongoing research. The main fields of work in IgorFs at the moment are the support for multiple writers, file system access rights and automatic self-driven data replication.

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