The InterPlanetary File System

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ipfs node
cli
library
http api
http/ipfs gateway
webui
go get -u github.com/ipfs/go-ipfs/cmd/ipfs
ipfs
ipfs version
ipfs init
ipfs daemon
echo ‘Hello IPFS!’ > hello.txt

ipfs add hello.txt
ipfs cat QmYWAifyw2V5dEq7c5GgdSPffeKoYXQZggnYzw5RbXpig4
ipfs swarm peers
http://localhost:8080/ipfs/QmYWAifyw2V5dEq7c5GgdSPffeKoYXQZggnYzw5RbXpig4
http://gateway.ipfs.io/ipfs/QmYWAifyw2V5dEq7c5GgdSPffeKoYXQZggnYzw5RbXpig4
ipfs add -r directory

http://gateway.ipfs.io/ipfs/QmeYYwD4y4DgVVdAzhT7wW5vrvmrKPQj8wcV2pAzjbj886
CENTRALIZED

DECENTRALIZED

DISTRIBUTED
http://localhost:5001/webui
Under the hood
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- MerkleDAG (Directed Acyclic Graph) [Git]
- Multihash (Q = SHA256 in Base58)
- DHT (Distributed Hash Table) [Kademlia]
- Bitswap (data block exchange) [BitTorrent]
IPFS is a protocol

- defines a content-addressed file system
- coordinates content delivery
- combines Kademlia + BitTorrent + Git
IPFS is a web

- can be used to view documents like the web
- files accessible via HTTP at
  
  http://gateway.ipfs.io/ipfs/<path>

- browsers or extensions can learn to use ipfs:// directly
- hash-addressed content guarantees authenticity
IPFS is modular

- connection layer over any network protocol
- routing layer
- uses a routing layer DHT
- uses a path-based naming service
- uses bittorrent-inspired block exchange
IPFS uses crypto

- cryptographic-hash content addressing
- block-level deduplication
- file integrity + versioning
- filesystem-level encryption + signing support
IPFS is peer-to-peer

- worldwide peer-to-peer file transfers
- completely decentralized architecture
- **NO** central point of failure
IPFS is a content delivery network

- caching-friendly (content-hash naming)
- bittorrent-based bandwidth distribution
IPFS has a name service

- IPNS, an SFS inspired name system
  - peer identity: QmdX9aYHdMEbPQT1YfvYbPVcYXAQe554bzuOZhLo2dVMra
- global namespace based on PKI
- serves to build trust chains
- compatible with other NSes
- can map DNS, .onion, .bit, etc to IPNS
ipfs.pics
Thank you!

ipfs.io