

HyperDB Workshop

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Overview

- Holepunch stack overview
- Why Hyperdb?
- Building a hyperdb app (demo)
- Extending the app (assignment)

Holepunch Stack

DATA

HyperDB

- Schemas
- Indices
- Search

Hyperbee

- Database (B-tree)
- Lookup by key
- Iterators

Hypercore

- Append-only log
- Sparse

DISCOVERY

Hyperswarm

- Swarming (continuous)
- Lookup (key → connections)
- Announce (key → connections)

HyperDHT

- Create servers
- Announce topics (keys)
- Connect to peers (key → ip+port)
- Lookup topics (key → peer keys)

Connections

Protomux RPC

- Remote procedure calls

Protomux

- Multiplexed streams

Hyperswarm Secret Stream

- End-to-end encryption

UDX

- Streams over UDP

Why HyperDB?

- Efficient lookup
 - In Hyperbee:
 - ✓ Efficient lookup/search by key
 - ✗ Inefficient otherwise

| | | | |
|--|--|--|--|
| En-fr → - driveKey: aaaa - type: 'translate' | En-it → - driveKey: bbbb - type: 'translate' | En-es → - driveKey: cccc - type: 'translate' | En-gen → - driveKey: dddd - type: 'generation' |
|--|--|--|--|

- ✓ Pub key of en-fr?
- ✓ All pub keys between 'aaaa' and 'cccc'?
- ✗ Model name of 'aaaa'?
- ✗ All 'translate' models?

Why HyperDB?

- Schemas + versioning + code generation
 - Hyperbee:
 - ✓ Do whatever you want
 - ✗ A lot of work
 - ✗ Easy to mess up
 - HyperDB (using hyperschema):
 - Define schema in a build.js file
 - Encodings automatically created
 - Extend the schema later
 - Enforces correct versioning

Demo + Assignment

<https://github.com/holepunchto/hyperdb-workshop>