

# Multi-Writer HyperDB Workshop

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

# Overview

- Holepunch stack overview
- Why Autobase?
- Workshop goals
- Building a multi-writer hyperdb app (demo)

# Holepunch Stack

## DATA

### HyperDB

- Schemas
- Indices
- Search

### Hyperbee

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

### Hypercore

- Append-only log
- Sparse

### Autobase

- Multi-writer Hypercore

## 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

- Multiplex protocols

### Hyperswarm Secret Stream

- End-to-end encryption

### UDX

- Streams over UDP

# Why Autobase?

- Write reliability
  - Multiple instances
  - Eventual consistency (c**AP**)
  - Note: read reliability is always high in P2P systems
    - And eventually consistent even for most single-writer architectures
- Backups and disaster Recovery
  - DO NOT: backup corestore folders
    - Really, there will be pain
  - DO: use blind peers (or equivalent) to backup all data (read only)
  - DO: rotate writers when an instance is permanently lost

# Workshop Goals

- Create + deploy a multi-writer hyperdb service
- Intro to hyperdispatch
  - Organise autobase operations
- Intro to Protomux RPC and Protomux-RPC client
  - Expose and access RPC endpoints

# Assumed Knowledge

- Previous Hyperdb workshop
  - <https://github.com/holepunchto/hyperdb-workshop>
- Corestore replication over Hyperswarm
- Autobase basics:
  - Role of open, close and apply
  - Apply guarantees linear execution of operations
  - Each writer has a local core (and corresponding key)
  - Writers collaborate to produce a shared view
  - Autobase views have an indexed part and an unindexed tip
  - When a writer gets added or removed, the view key(s) change

# Demo + Assignment

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