YIG S3 STORAGE PERFORMANCE TUNING

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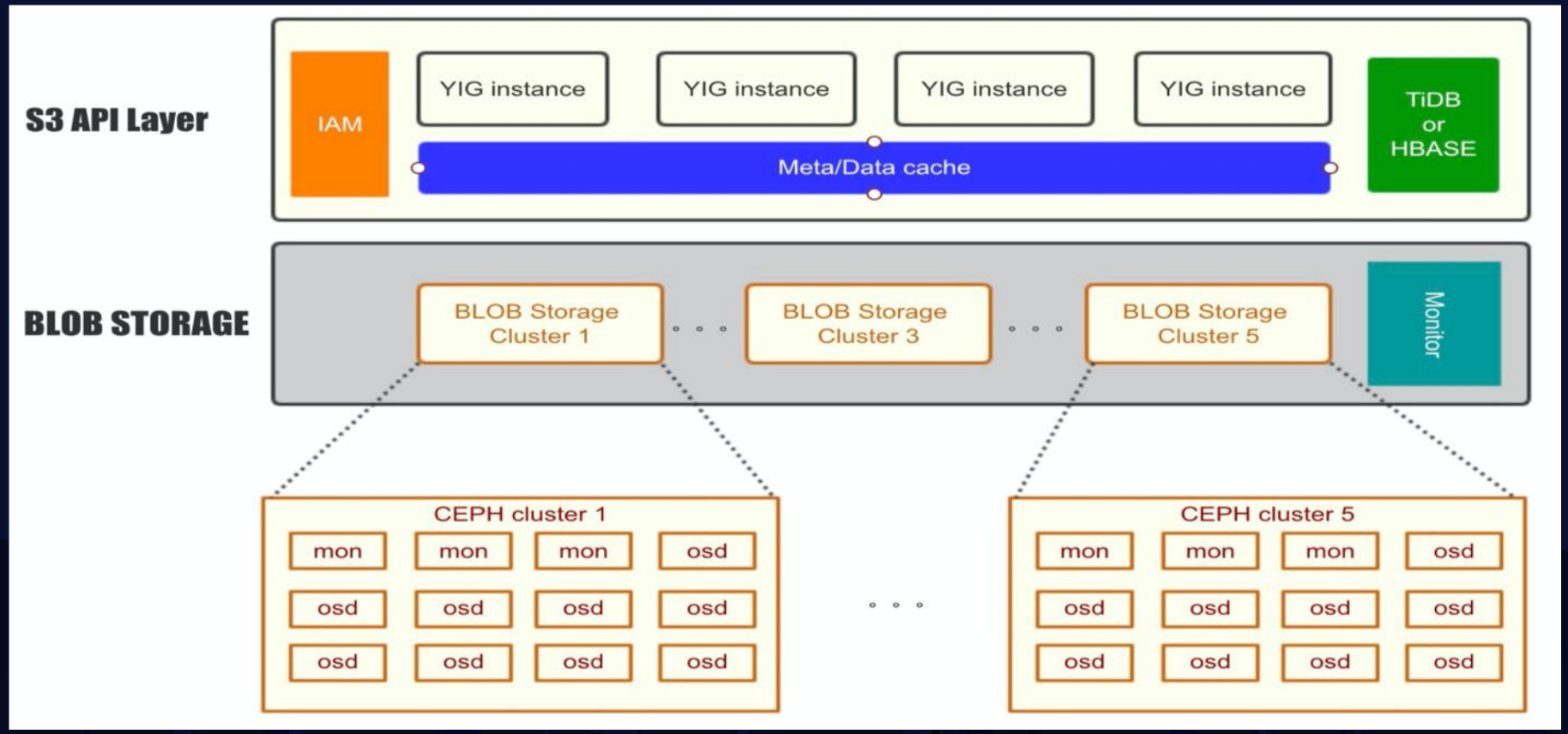
1. YIG INTRODUCTION



2. YIG FEATURES

1. YIG can use different storage backend
2. YIG can use different metadata storage
3. YIG store file at distinct backend according to file size
4. YIG can avoid data movement and IO drop down caused by scaling out ceph cluster
5. YIG use unified cache to save metadata

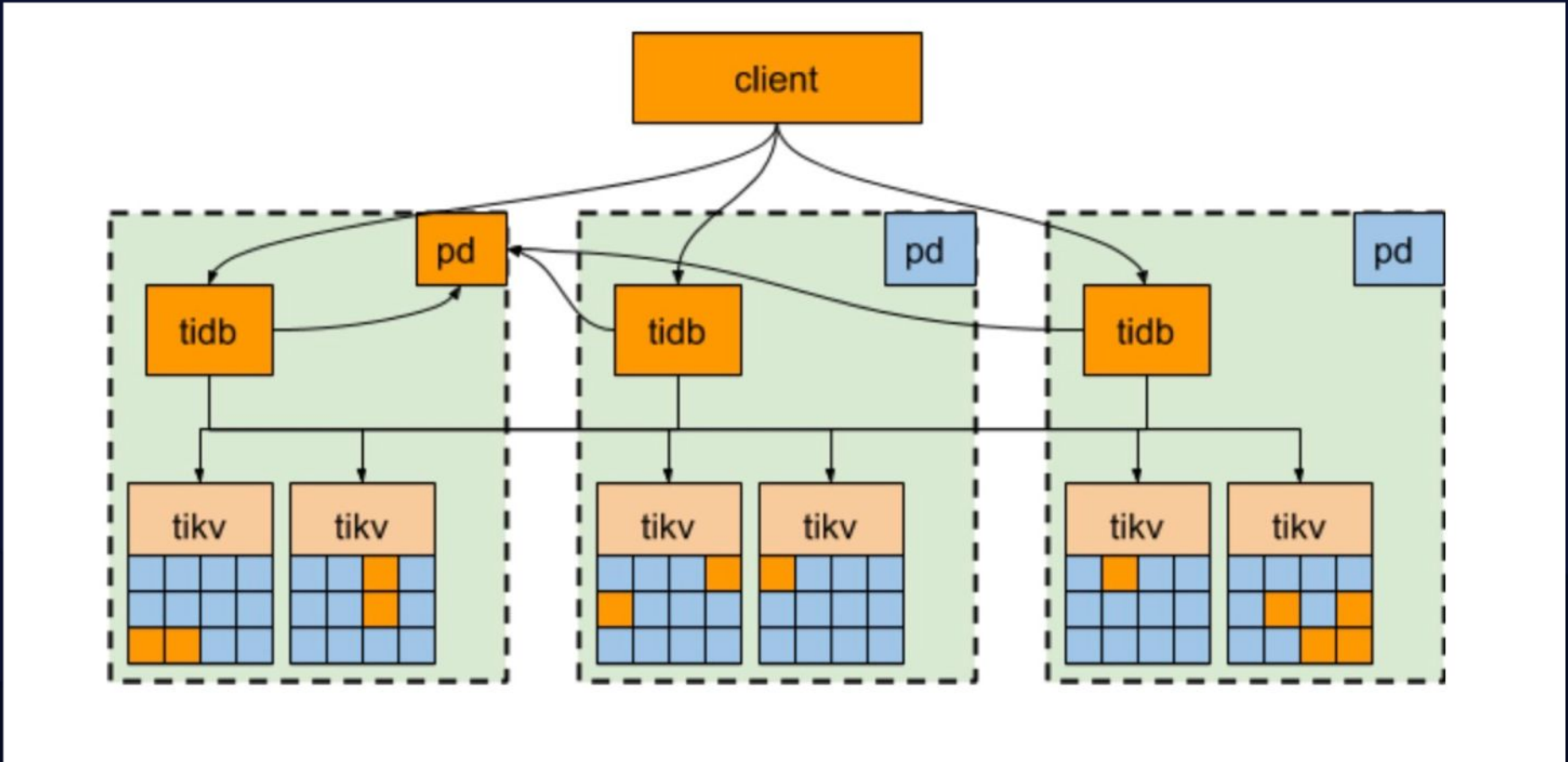
2. PROFILING YIG

1. YIG is implemented by golang language
2. Find bottlenecks by using Go's profiling tools
3. optimize the memory utilization to reduce the pressure of gc

3. REPLACE TIDB WITH TIKV

1. How to use TiDB
   - Save metadata for S3
   - create tables with name “buckets”, “objects”, “multipart”…
2. How to use TiKV
   - Use key info as rowkey
3. Performance improvement
   - TiDB server is not necessary.
   - Metadata request is processed by TiKV directly
   - improve reading and writing

TIDB ARCH



4. ADD DATA CACHE TIER

1. Create ssd pool and hdd pool in a ceph cluster
2. New object will be saved in ssd pool at first by YIG
3. Move object from ssd pool to hdd pool in background
4. Object will be read from hdd ceph at last
5. Greatly improve TPS for YIG

5. ADD LOCAL READ CACHE FOR DATA

1. Some objects are read frequently within a short time
2. Cache the objects in local filesystem
3. Read object from local filesystem
4. Improve reading performance

5. REPLACE LIBRADOSSTRIPER

1. Libradosstriper is the striping API of ceph rados, and it has lock when read and write, but the lock is not necessary for YIG
2. Object will be not modified once it is written in YIG
3. Implement a new api that fit in YIG, and manage object strip info as YIG metadata


THANK YOU
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