root cellar

Bleve

- Full-text Search Index
- Pluggable KV layer
  - Initially focused on cgo solution for performance
  - Now hoping to beat performance with simpler Go solution

See also https://www.cockroachlabs.com/blog/the-cost-and-complexity-of-cgo/

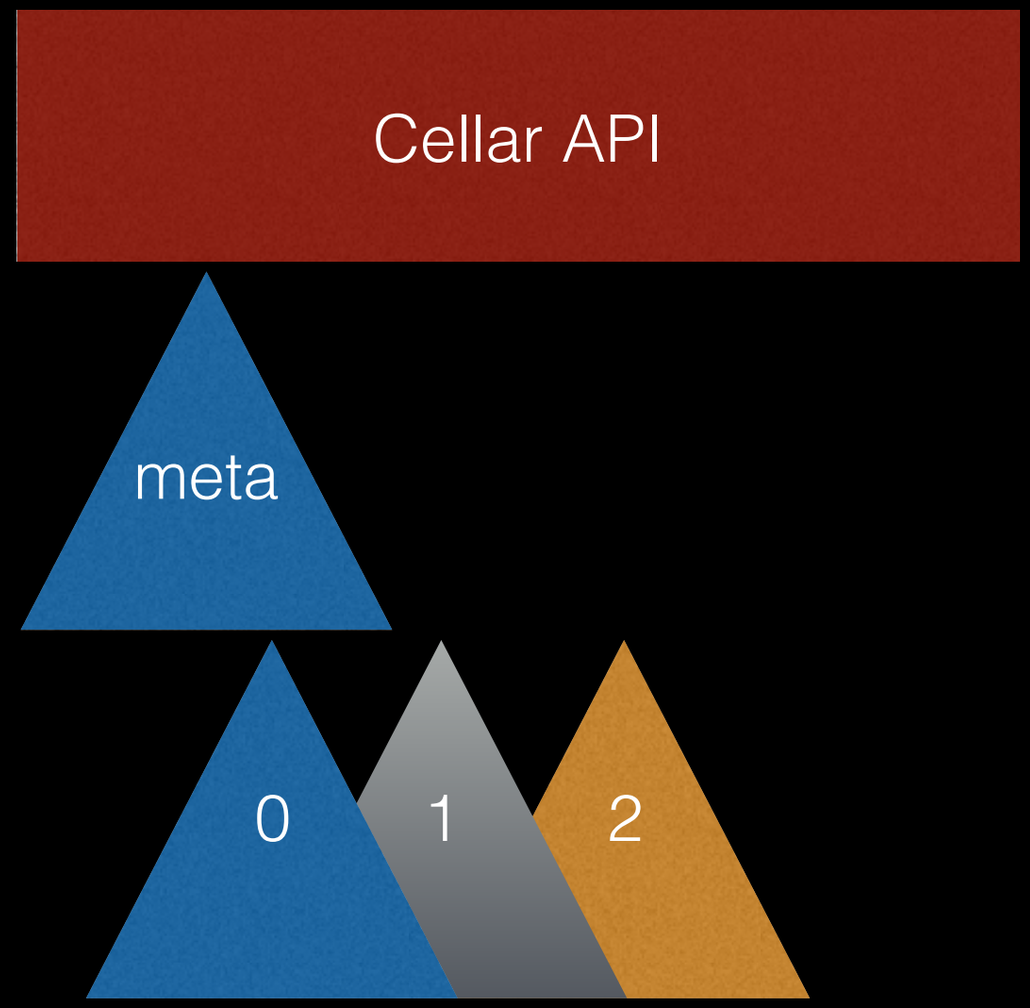
Bolt

embedded key/value database for Go

- Simple API
- Single File
- mmap B+tree

Build LSM on top of Bolt

- Instead of random updates to one large index
- Each batch becomes sequentially written stand-alone bolt instance
- Get/Seek/Next have to navigate multiple read-only bolt instances



Bolt API

- DB - file
- TX - atomic writes, snapshot reads
- Bucket - multiple (nested)
- Cursor - fast access consecutive keys

Cellar API

- DB - directory containing data bolts + meta bolt
- TX - each write TX creates new bolt db, atomically swapped into active list
- Bucket - only ONE
- Cursor - get/seek across all active bolts

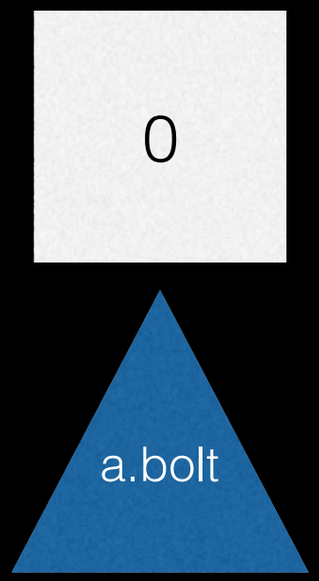
Opening a Cellar

```
c, err := Open("test", nil)

if err != nil {

   log.Fatal(err)

}

defer c.Close()
```

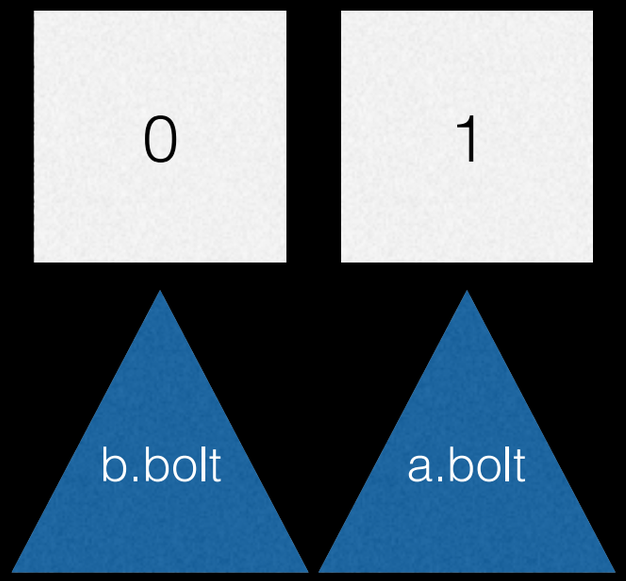
Writing Data

```
err = c.Update(func(tx *Tx) error {

   tx.Put(k,v)

   return nil

})

if err != nil {

   t.Fatal(err)

}
```

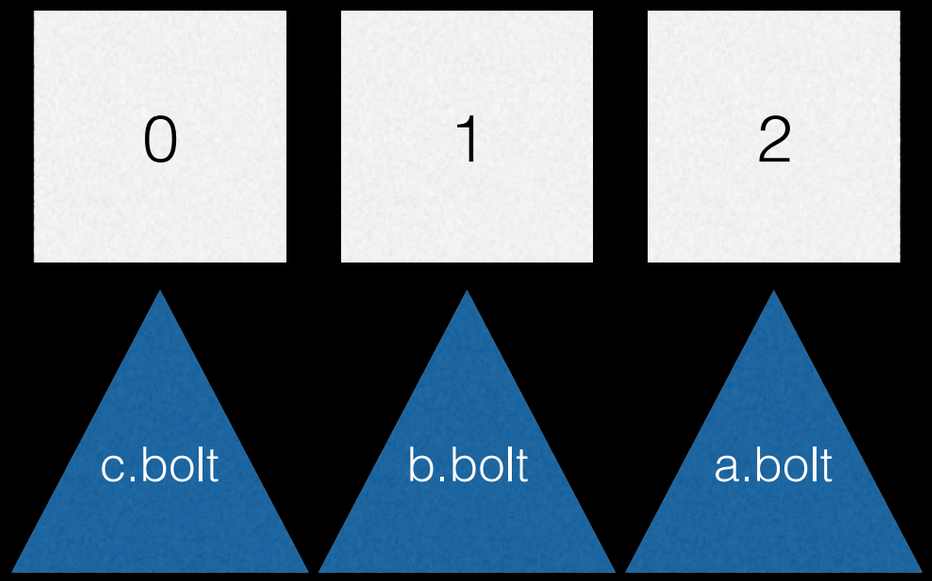
cellar bolt list



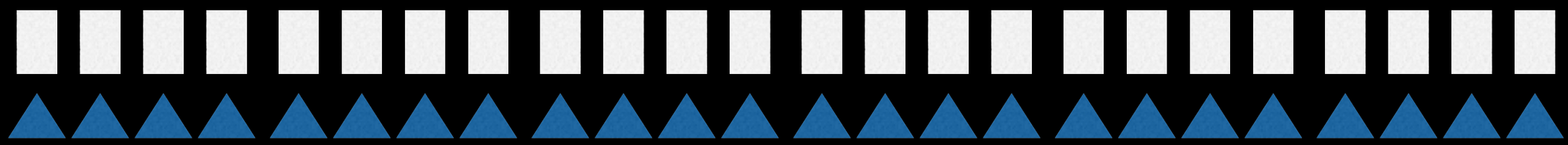
cellar bolt list



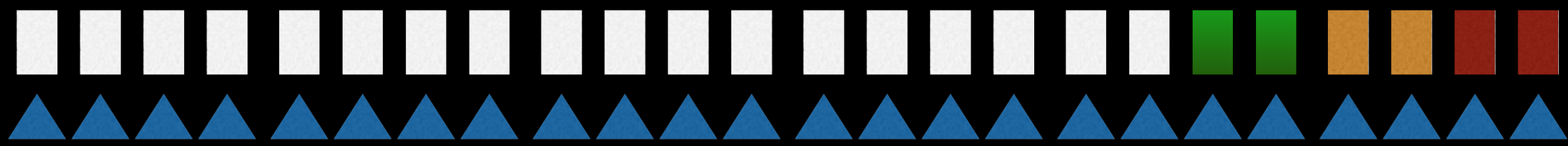
cellar bolt list



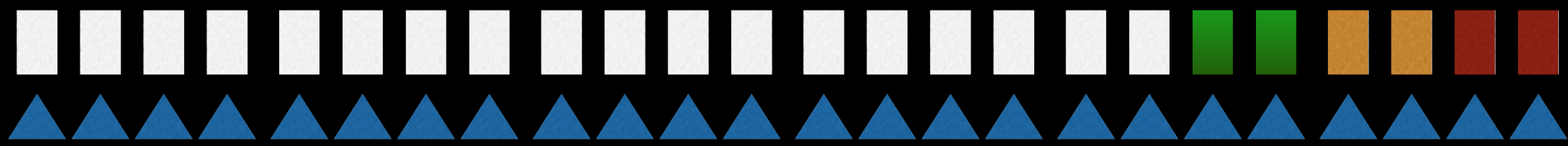
cellar bolt list



cellar merge



adjacent segments merged concurrently



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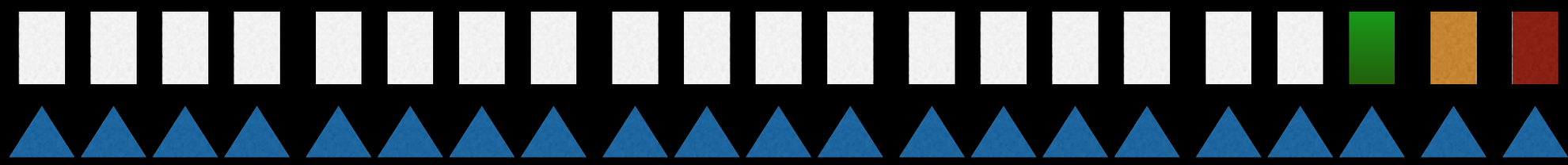
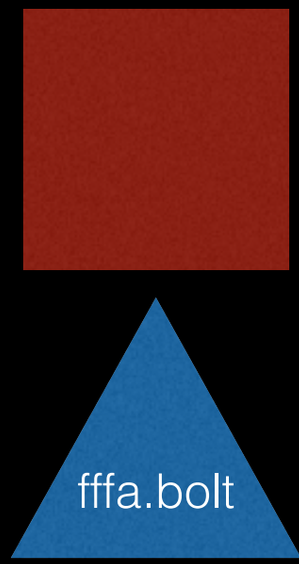


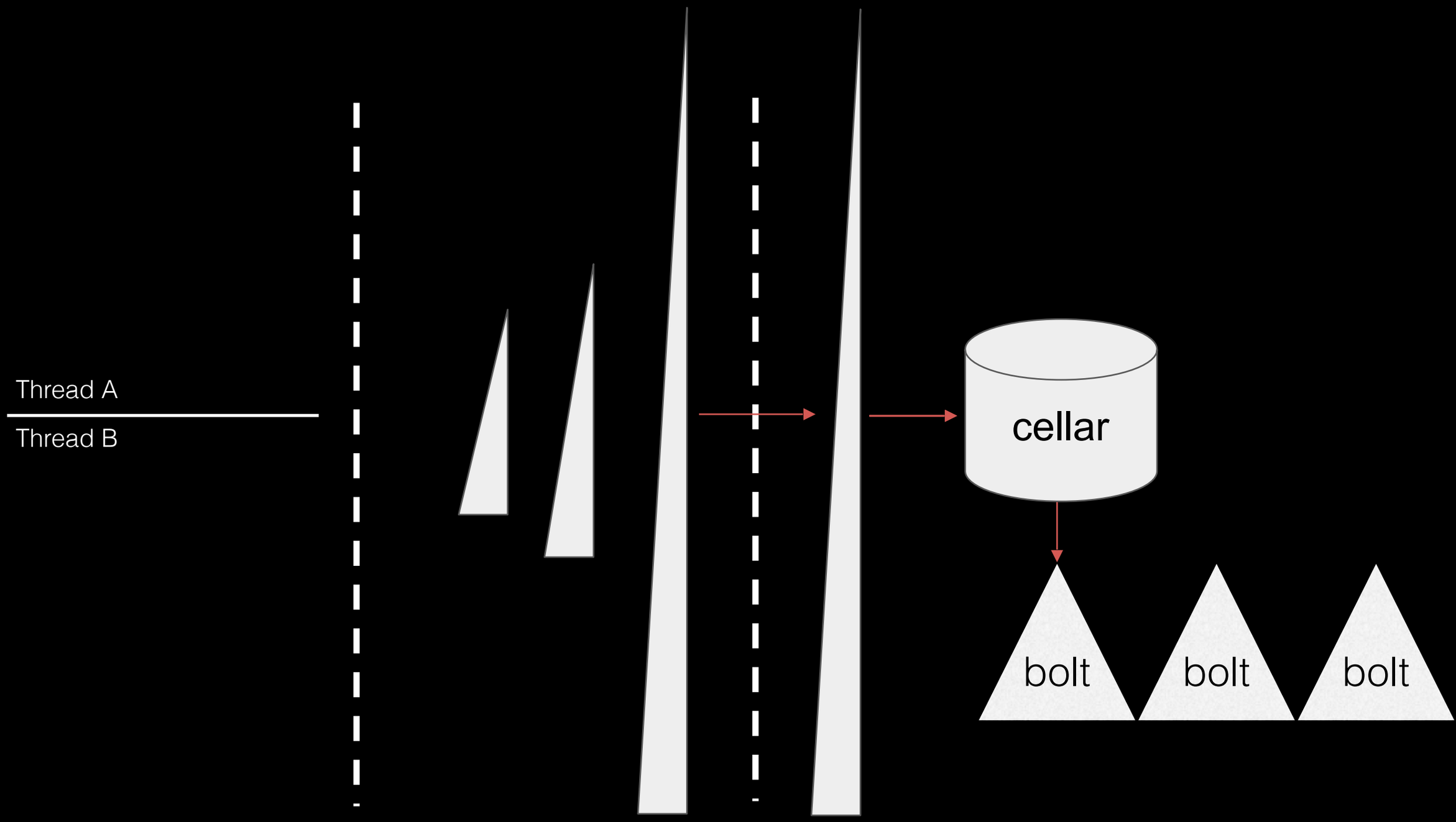
eventually everything is merged back to single bolt



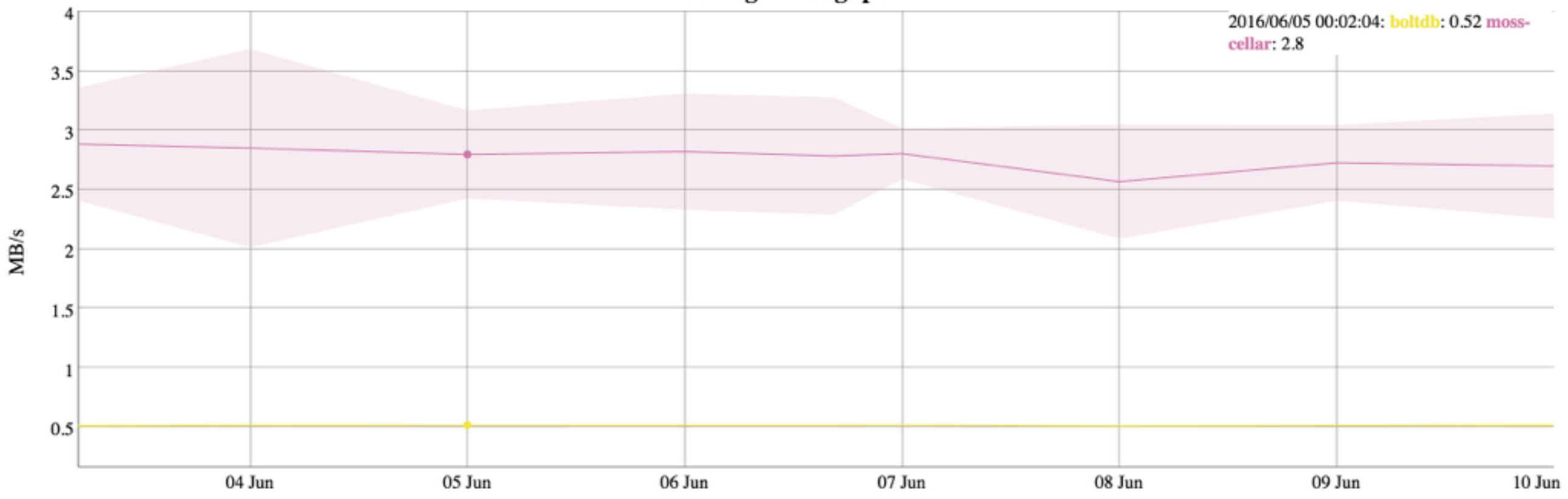
moss

memory
oriented
sorted
segments

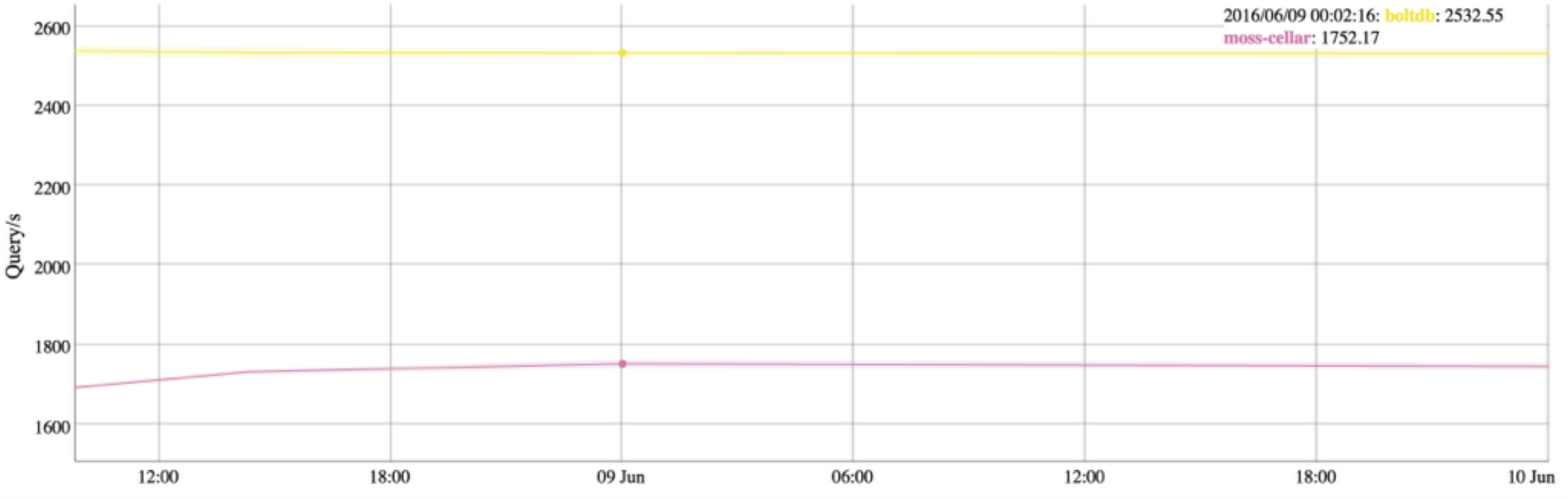
the moss/cellar fit



Indexing Throughput



Term Query (low)



moss + cellar
root cellar

Root Cellar

- Moss - https://github.com/couchbase/moss
- Bolt - https://github.com/boltdb/bolt
- Cellar - https://github.com/couchbaselabs/cellar

- @mschoch - @blevesearch - blevesearch.com