WiredTiger Backend for OpenLDAP

Open Source Solution Technology Corporation

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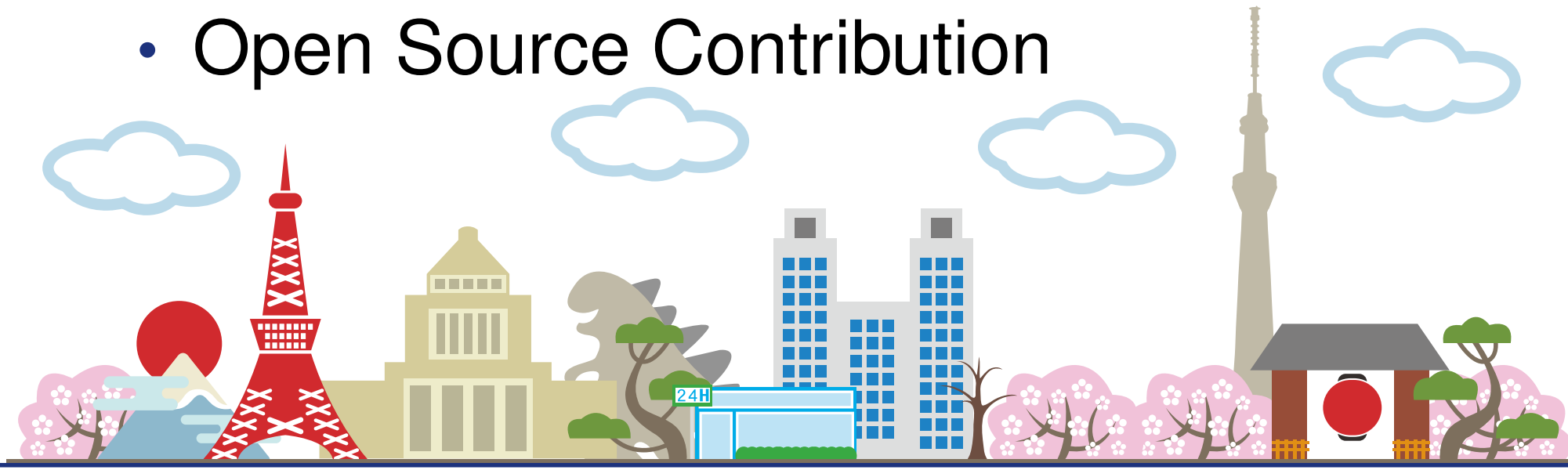
About OSSTech

- ID Management leading company in Japan.
- Storage Solution
- Open Source Contribution



What's back-wt

- New OpenLDAP Backend
- WiredTiger Database

About WiredTiger

- Embedded database
- High performance
- High scalability

Lock Free

- Hazard pointer
- Optimistic concurrency control

Data Structure

back-wt data structure

Reverse DN (sorted)	ID	PID
dc=com,dc=example,	1	0
dc=com,dc=example,dc=groups,	3	1
dc=com,dc=example,dc=users,	2	1
dc=com,dc=example,dc=users,cn=user1,	4	2
dc=com,dc=example,dc=users,cn=user2,	5	2

Searching ou=Users, with sub scope

Searching ou=Users, with childlen scope

Searching ou=Users, with one scope

bdb_next_id()

```
int bdb_next_id( BackendDB *be, ID *out )
{
  struct bdb_info *bdb=(struct bdb_info*)be->be_private;
  ldap_pvt_thread_mutex_lock(&bdb->bi_lastid_mutex);
  *out = ++bdb->bi_lastid;
  ldap_pvt_thread_mutex_unlock(&bdb->bi_lastid_mutex);
  return 0;
}
```

wt_next_id()

```
int wt_next_id(BackendDB *be, ID *out){
  struct wt_info *wi = (struct wt_info *)be->be_private;
  *out = __sync_add_and_fetch(&wi->wi_lastid, 1);
  return 0;
}
```

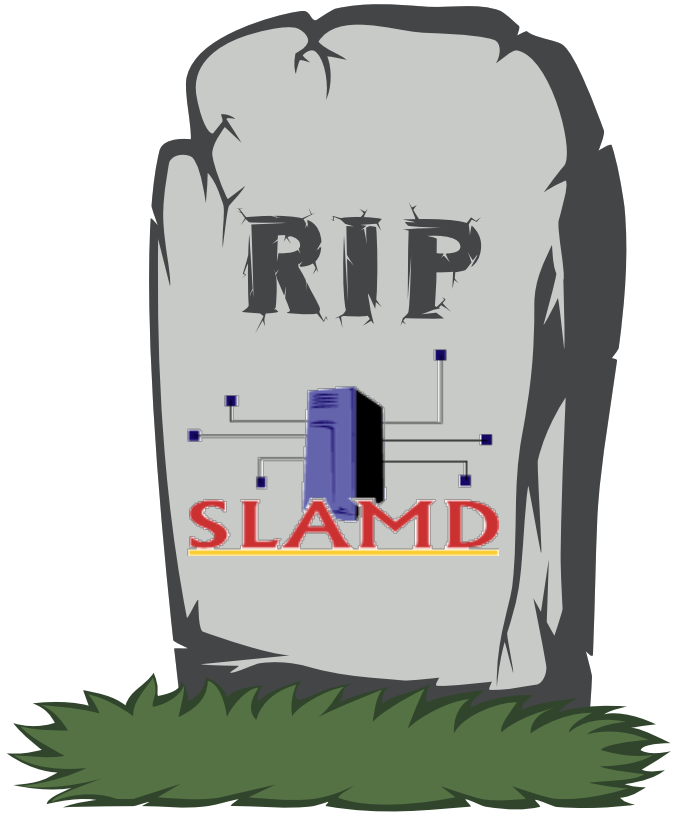
fsync(2) is slow

Durability Levels

1. in-memory txn log – fastest but no durability
2. write txn log file, no sync
3. write txn log file, sync per every commit

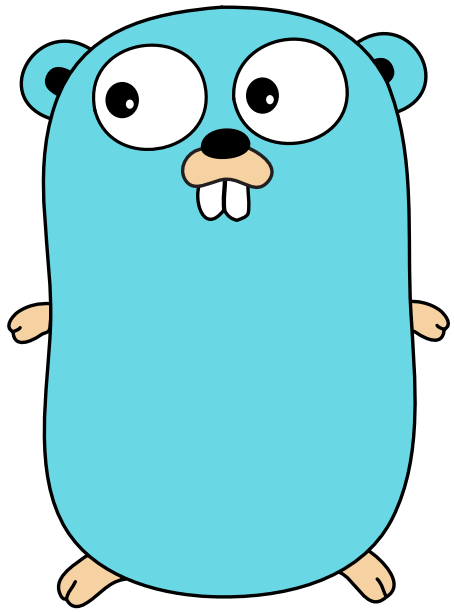
New Benchmark Tool - lb

- SLAMD is dead
- Command line interface
- Written in Go



Installation of lb

```
$ export GOPATH=~/go
$ go get github.com/hamano/lb
```



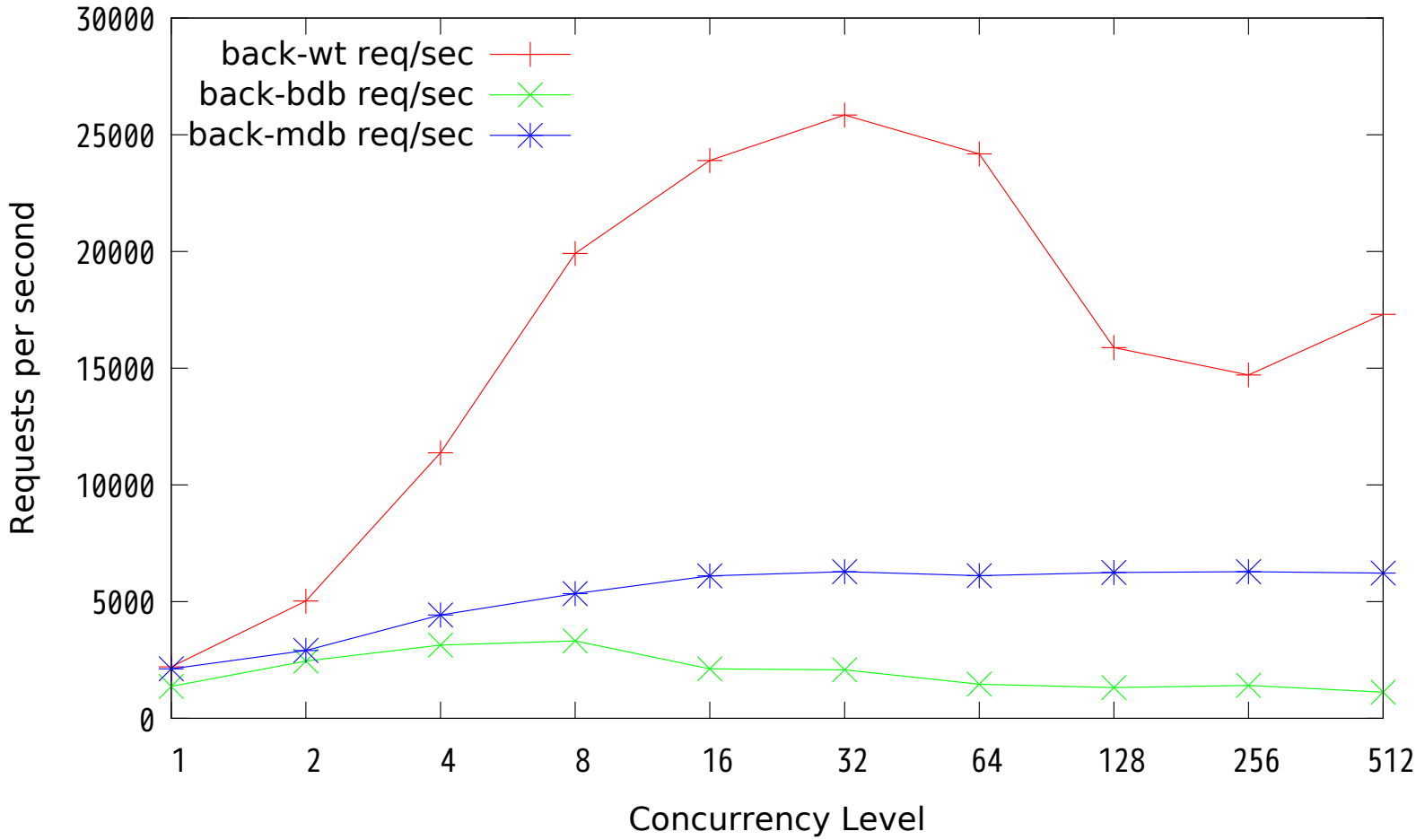
Benchmark Environment

- 12 Core CPU
- No RAID Card
- SAS Disk

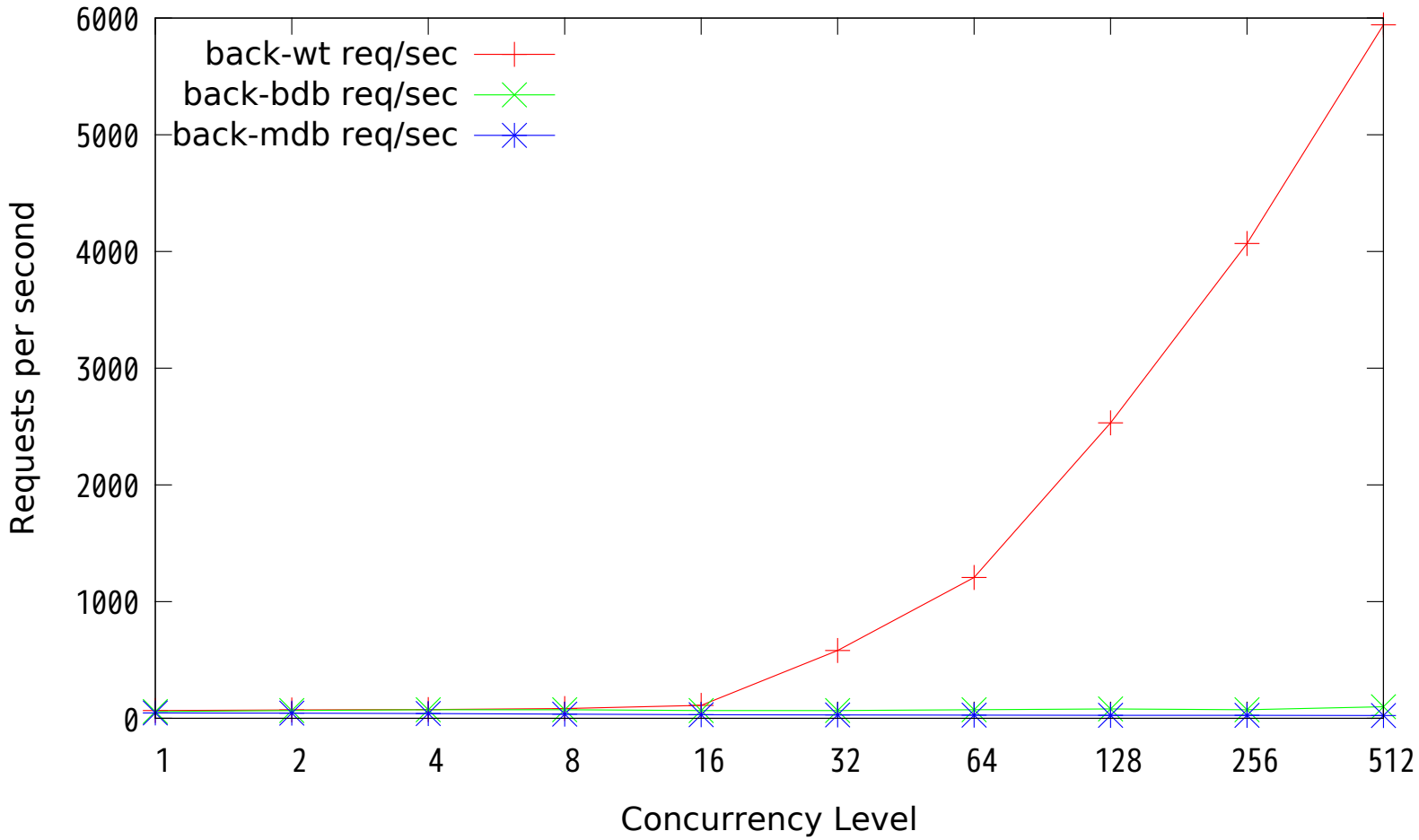
ADD Benchmark Script

```
for c in 1 2 4 8 16 32 64 128 256 512; do
    lb add -c $c -n 10000 --uuid ldap://targethost/
done
```

ADD (nosync) Benchmarks



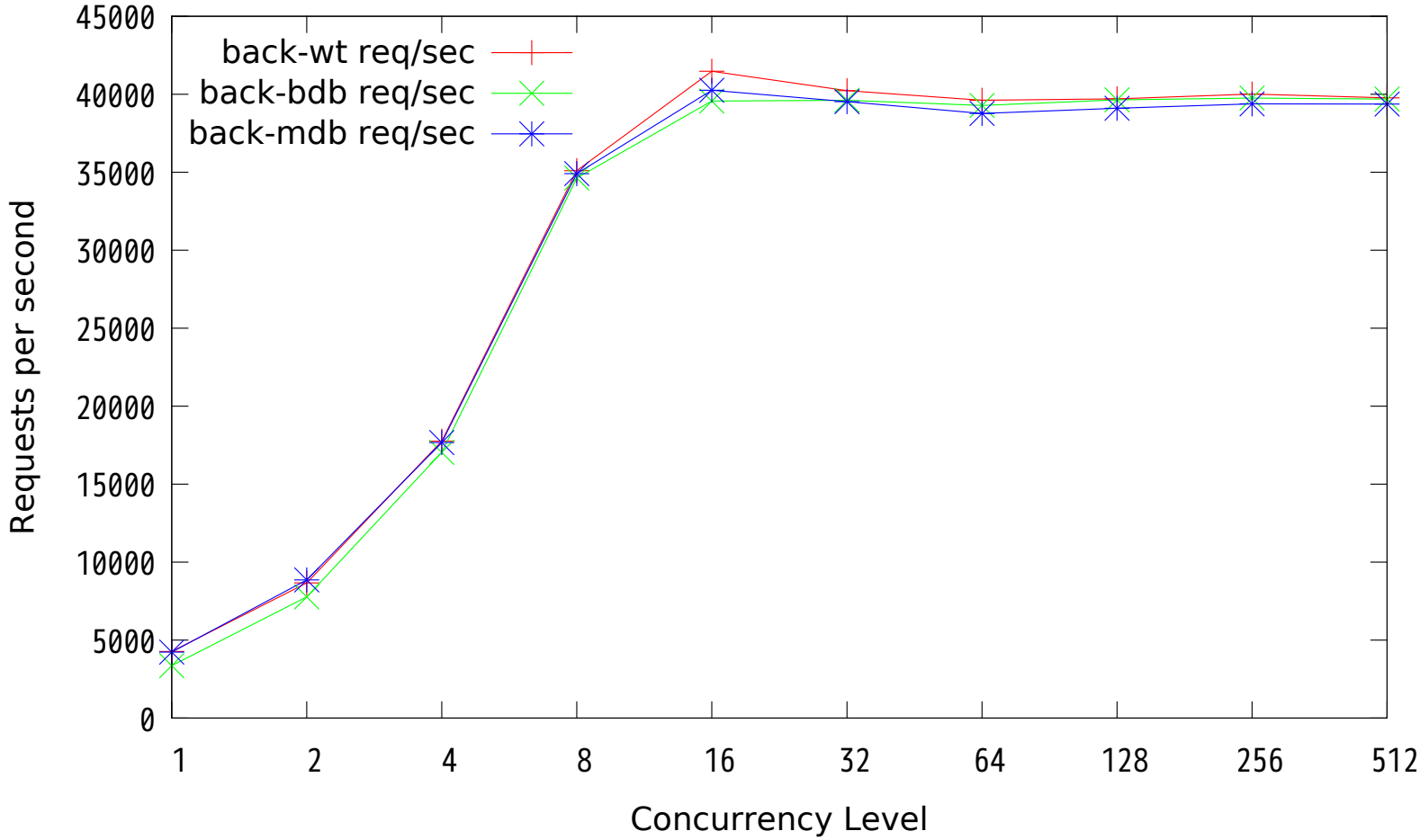
ADD (sync) Benchmarks



BIND Benchmark Script

```
for c in 1 2 4 8 16 32 64 128 256 512; do
  lb bind -c $c -n 100000 \
    -D "cn=user%d,dc=example,dc=com" -w secret \
    --last 10000 ldap://targethost/
done
```

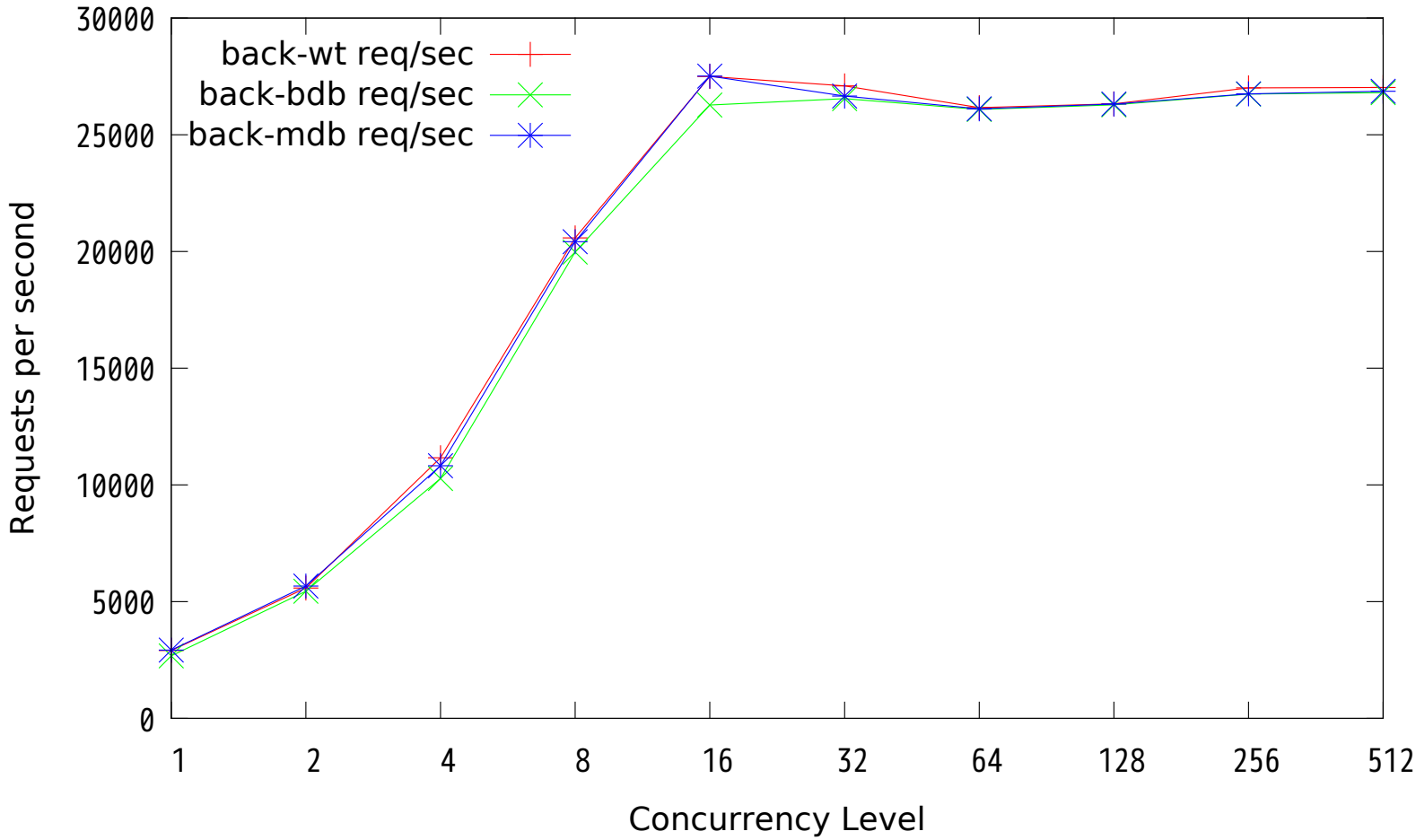
BIND Benchmark Result



SEARCH Benchmark Script

```
for c in 1 2 4 8 16 32 64 128 256 512; do
  lb search -c $c -n 100000 \
    -a "(cn=user%d)" \
    --last 10000 ldap://targethost/
done
```

SEARCH Benchmark Result



Tests

$ make -C tests wt

54
65 Succeed

Tasks

- Hot-backup
- alias and glue entry

Thank You!