



Subject: High Performance Zope 3
Date: July 8th 2007 10:30:00 GMT+01:00
To: Europython 2007, Vilnius

Lovely Systems is building Webapplications
that **can scale.**

We're using **Zope3**.
During the last year we had several
Problems to solve.

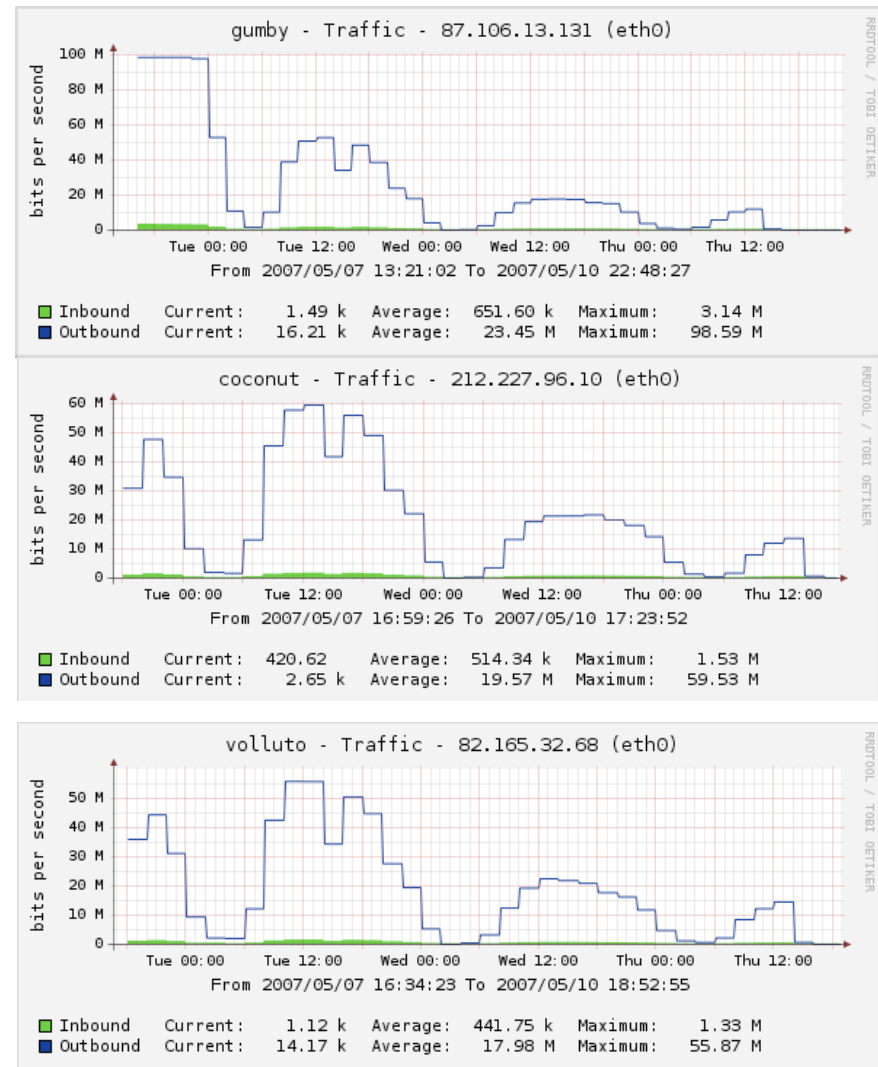
Open Source and the **Python**
Community are important for us.

We'd like to share **Code** and **Experience** with you.

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#1: peak traffic*



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#2: parallel writes

```
File "/home/zope-media/videoportal/zh/zope/ZEO
File "/home/zope-media/videoportal/zh/zope/ZEO
    return self.storage.loadEx(oid, version)
File "/home/zope-media/video/vol/lib/python/te
    data = self.load(oid, version)
File "/home/zope-media/video/vol/lib/python/te
    raise POSException.ConflictError(oid=oid)
ConflictError: database conflict error (oid 0x01
-----
2007-02-07T16:34:36 INFO ZEO.StorageServer (2334
waiting: 1.
waiting: 1.
2007-02-07T16:34:36 INFO ZEO.StorageServer (2334
-----
```

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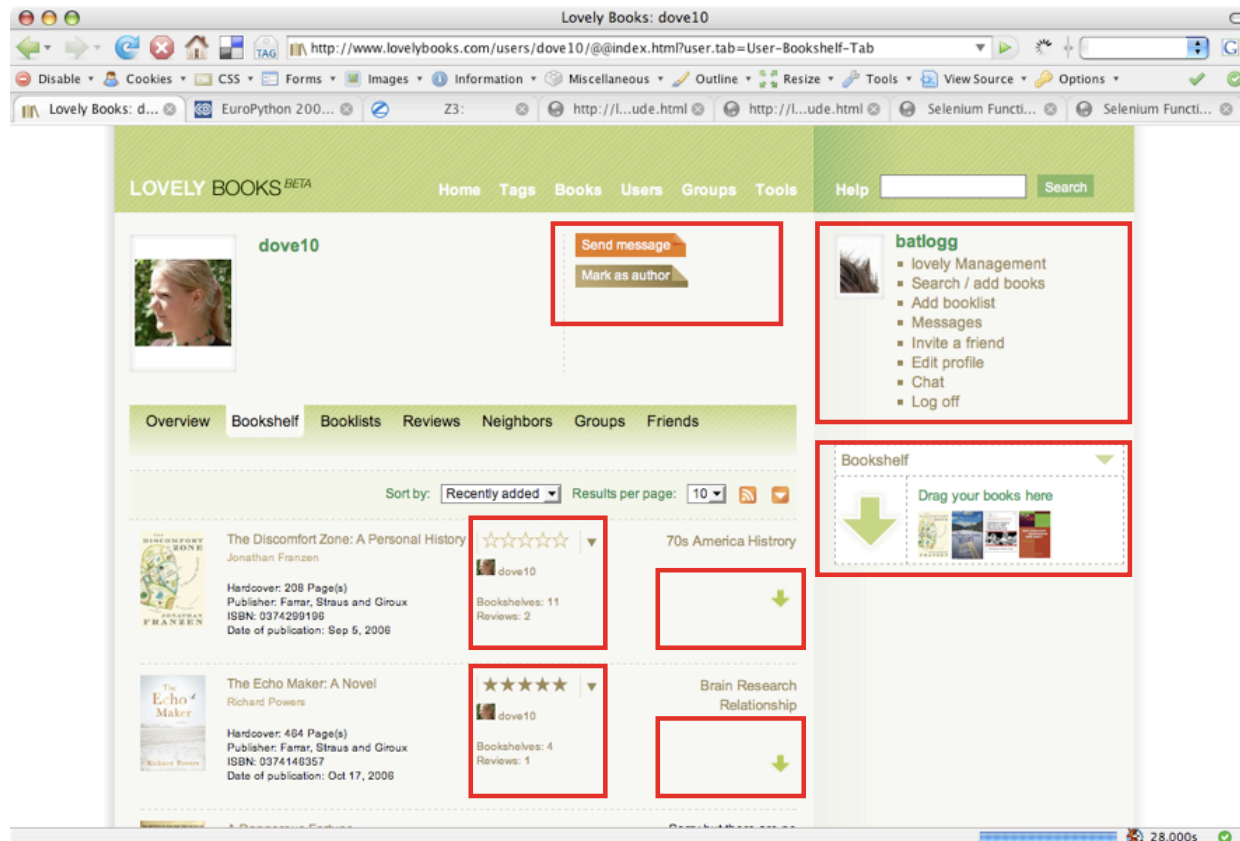
#3: number of objects



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#3: personalization



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some **Web 2.0** characteristics:

a lot of users are are accessing the **top items**
with **high bandwidth**

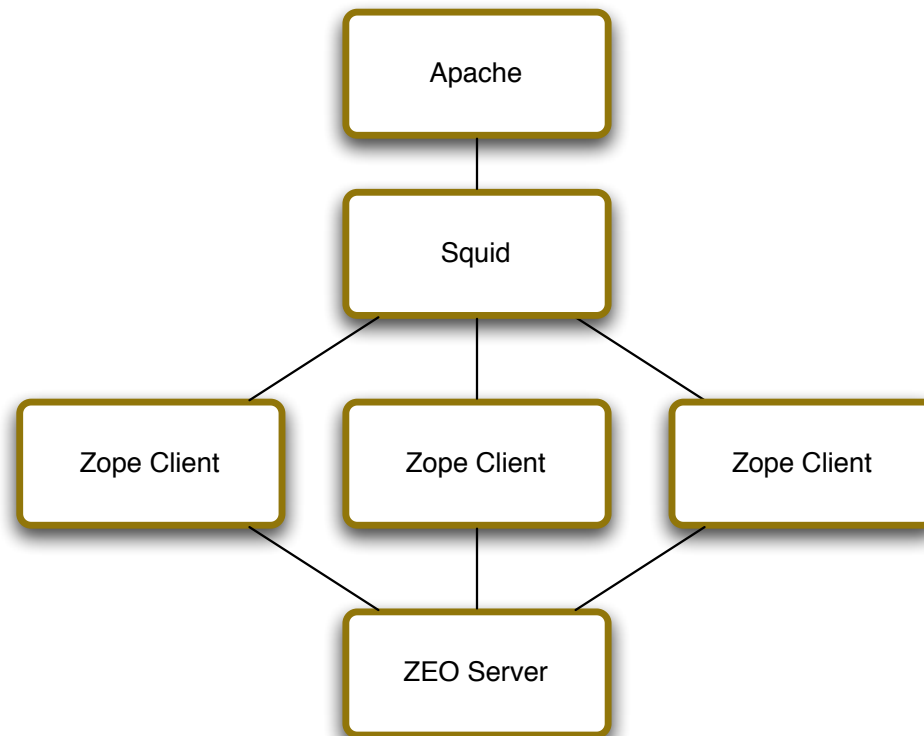
the **“long tail”** is being accessed constantly

high level of **personalization**,
stale content for logged in users is no option

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the first Setup*

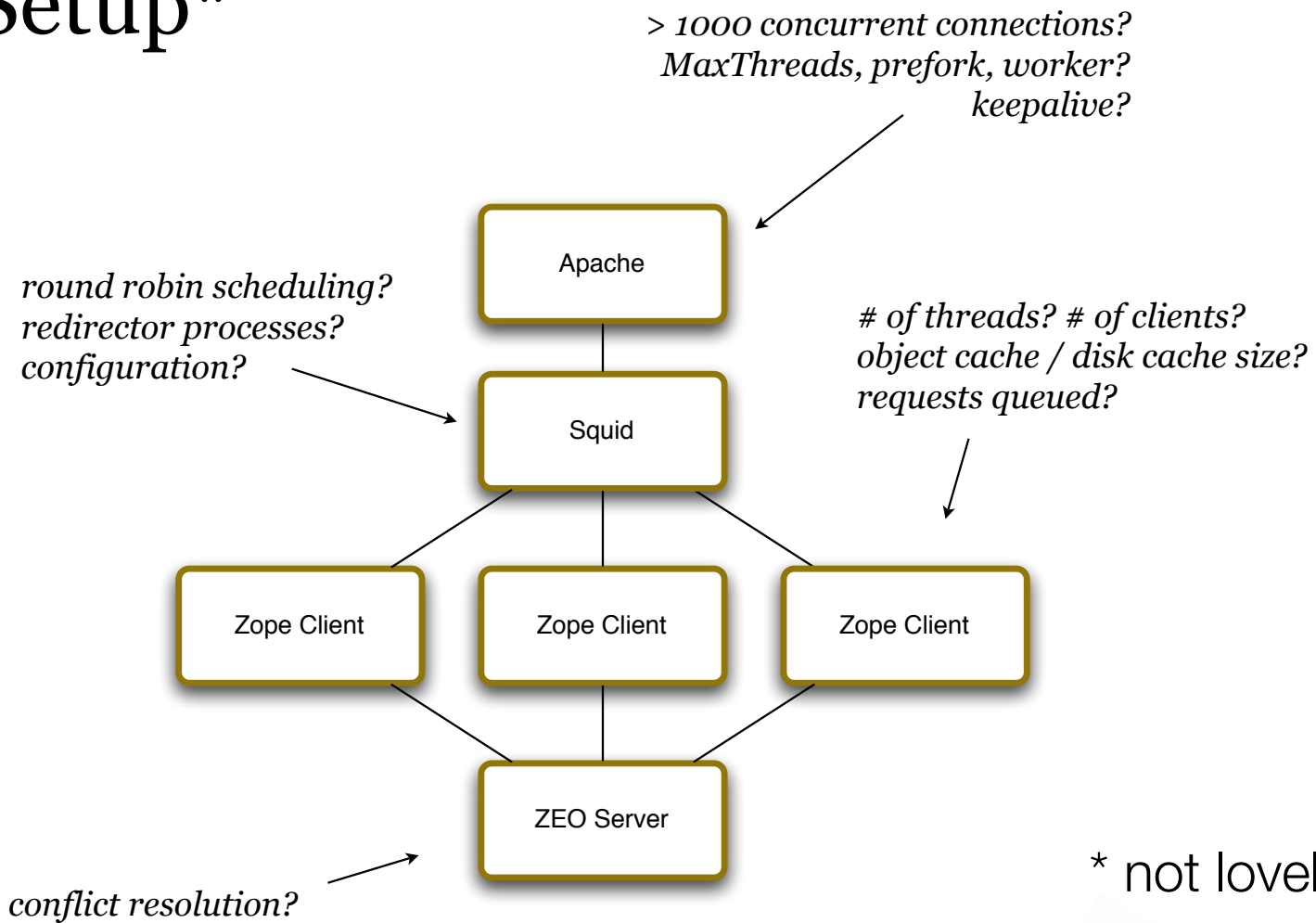


* not lovely

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Lovely

the first Setup*



* not lovely



Apache

HTTP SERVER PROJECT

Concurrency Level:	1000	1000
Time taken for tests:	22.626078 seconds	1.143431 seconds
Complete requests:	10000	10000
Failed requests:	0	0
Write errors:	0	0
Non-2xx responses:	10000	10321
Total transferred:	4690000 bytes	3292399 bytes
HTML transferred:	3190000 bytes	1744249 bytes
Requests per second:	441.97 [# /sec] (mean)	8745.61 [# /sec] (mean)
Time per request:	2262.608 [ms] (mean)	114.343 [ms] (mean)
Time per request:	2.263 [ms] (mean, across all concurrent requests)	0.114 [ms] (mean, across all concurrent requests)
Transfer rate:	202.42 [Kbytes/sec] received	2811.71 [Kbytes/sec] received

Transfer rate: 505.45 [Kbytes/sec] received

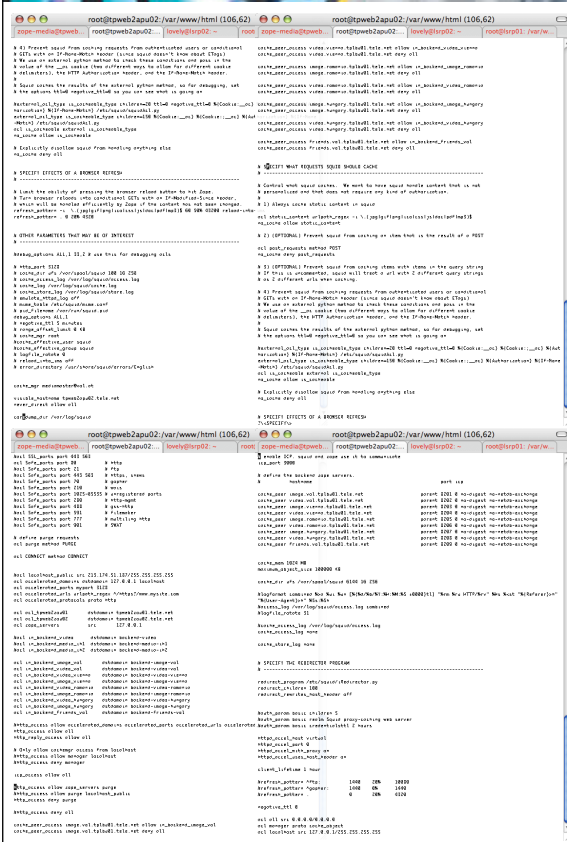
Time per request: 5.503 [ms] (mean, across all concurrent requests)

Time per request: 5505.008 [ms] (mean)

Transfer rate: 441.97 [Kbytes/sec] (mean)



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```

backend books_de {
    set backend.host = "127.0.0.1";
    set backend.port = "8110";
}
backend books_en {
    set backend.host = "127.0.0.1";
    set backend.port = "8210";
}
backend books_es {
    set backend.host = "127.0.0.1";
    set backend.port = "8310";
}

sub vcl_recv {
    if (req.http.host ~ "^www.lovelybooks.de$") {
        set req.backend = books_de;
    } elseif (req.http.host ~ "^www.lovelybooks.co.uk$") {
        set req.backend = books_en;
    } elseif (req.http.host ~ "^www.lovelybooks.com$") {
        set req.backend = books_en;
    } elseif (req.http.host ~ "^www.lovelybooks.es$") {
        set req.backend = books_es;
    } else {
        error 404 "Unknown virtual host";
    }

    if (req.request == "GET" && req.http.cookie
        lookup;
    }
}

```



Round Robin.

Trying 127.0.0.1... versus Least open connections

Connected to localhost.
Escape character is '^['.
Welcome to the Status Server

Threads: threads=6; working=0; waiter=6; queue=0

Threads: threads=6; working=0; waiter=6; queue=0

Threads: threads=6; working=1; waiter=5; queue=0

Threads: threads=6; working=0; waiter=6; queue=0

Threads: threads=6; working=1; waiter=5; queue=0

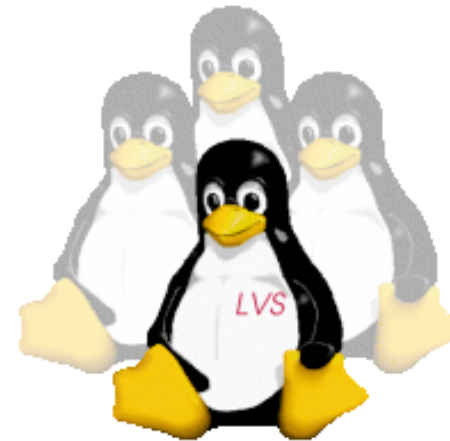
Threads: threads=6; working=0; waiter=6; queue=0

Threads: threads=6; working=1; waiter=5; queue=0

Threads: threads=6; working=0; waiter=6; queue=0

Threads: threads=6; working=1; waiter=5; queue=0

Threads: threads=6; working=0; waiter=6; queue=0



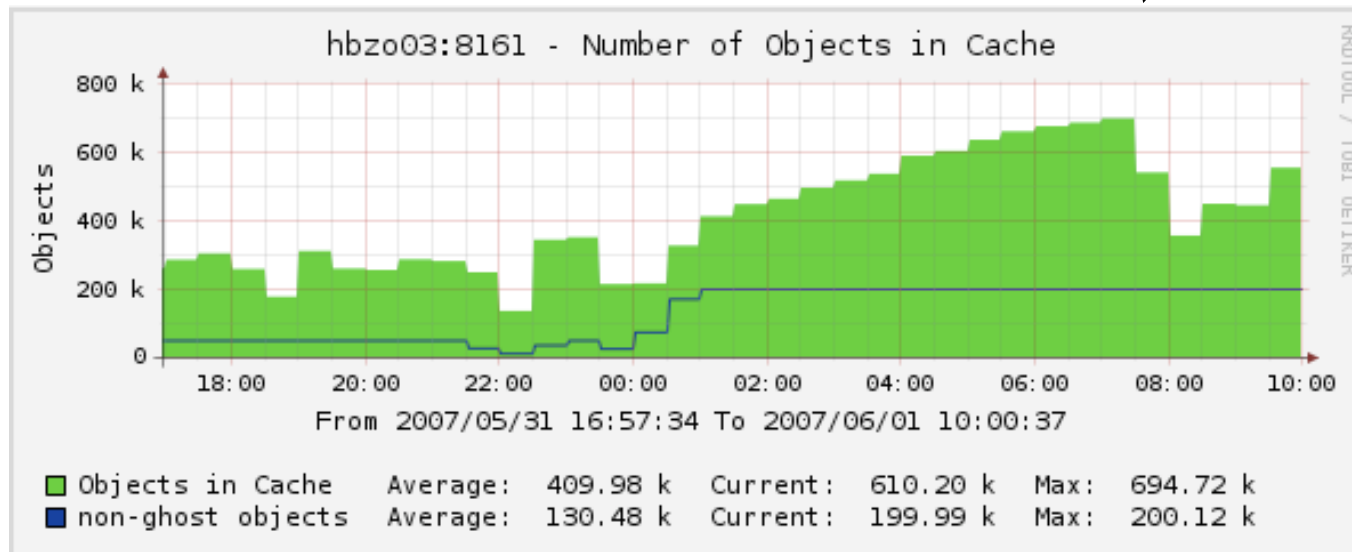
```
root@slb01:~# ipvsadm
IP Virtual Server version 1.2.1 (size=4096)
Prot LocalAddress:Port Scheduler Flags
  -> RemoteAddress:Port          Forward Weight ActiveConn InActConn
TCP  10.8.0.1:8210 lc
    -> 10.6.1.3:8213                Masq    0      0          0
    -> 10.6.1.2:8212                Masq    1      0          0
    -> 10.6.1.3:8218                Masq    0      0          0
    -> 10.6.1.1:8218                Masq    0      0          0
    -> 10.6.1.3:8212                Masq    1      0          0
    -> 10.6.1.3:8211                Masq    1      0          0
    -> 10.6.1.1:8217                Masq    0      0          0
    -> 10.6.1.1:8214                Masq    0      0          0
```

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Lovely

Monitor and trace your Zope clients

*# of threads? # of clients?
object cache / disk cache size?
requests queued?*



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Lovely

Zope Corp's

tools help us a lot

number of db connections, cache stats

zc.z3monitor

zc.zodbactivitylog

logging and analysis of zodbactivity

call time, analysis

zc.zservertracelog

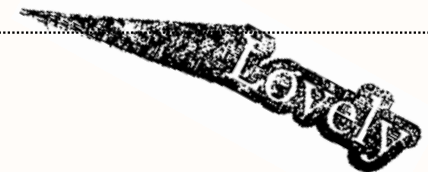
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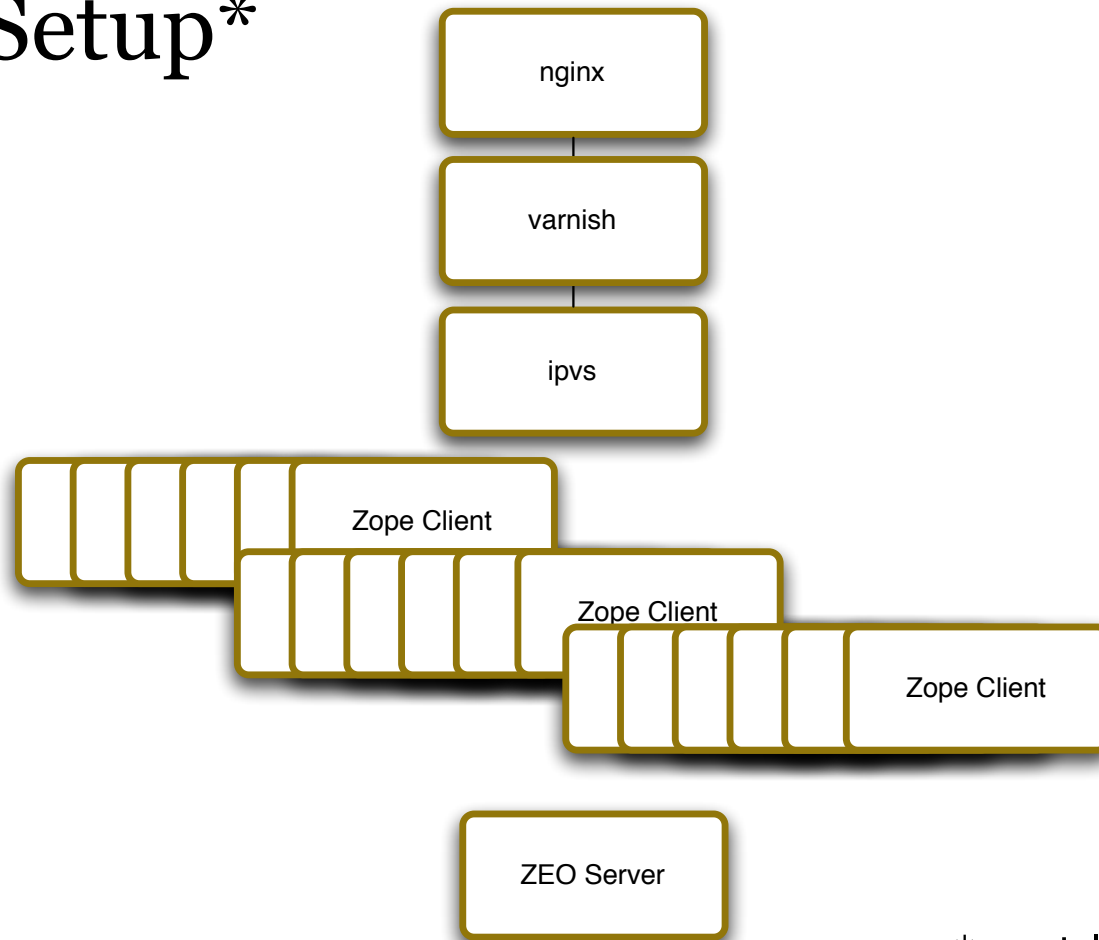
Findings and settings for

Lovely Applications

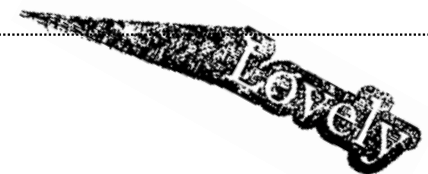
- we're CPU bound, so we use **one thread**
per zope
- assign **enough** Disk Cache to your Zope
(e.g. 2GB)
- make sure the object **cache** fits
(e.g. 200k objects)



the second Setup*



* not lovely enough



so far,
no single line
of code

now work on
the code

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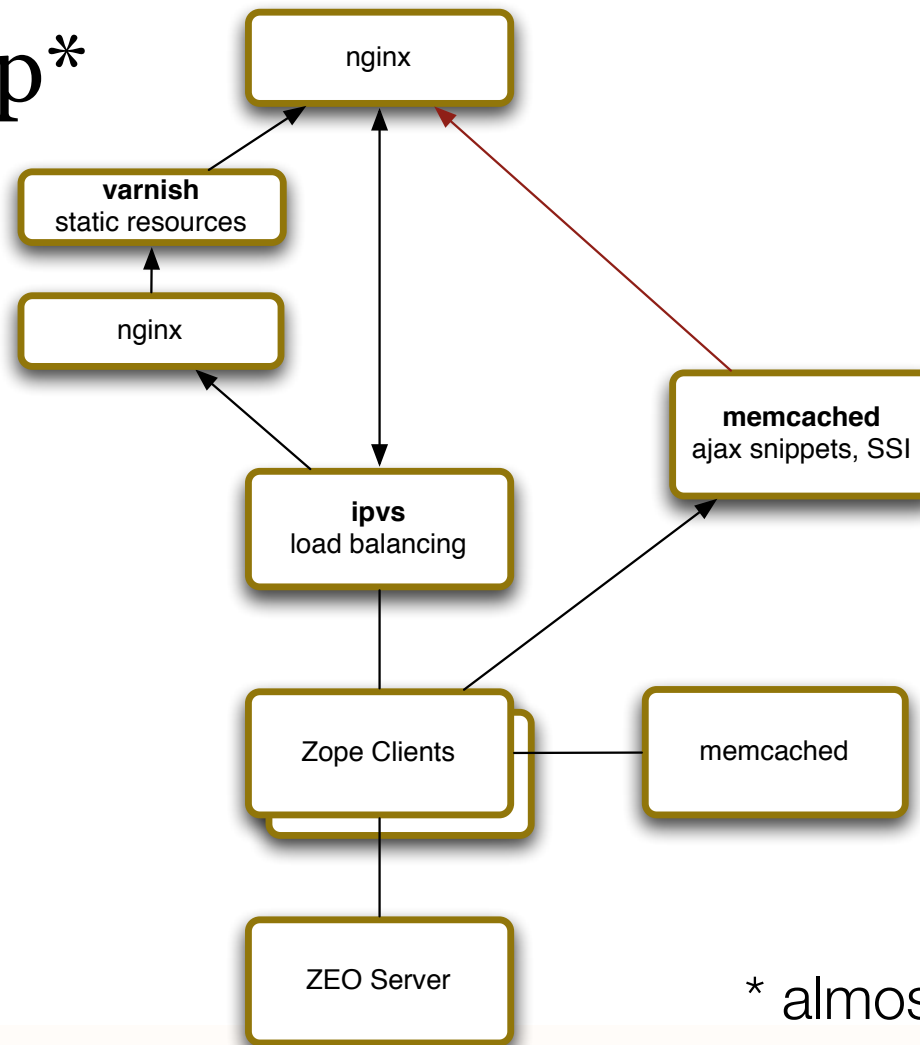
Tasks that are taking (potentially) **longer** need
to be done **deferred**

lovely.remotetask

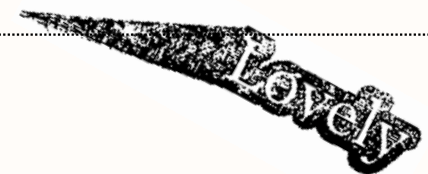
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the final? **Setup***



* almost lovely enough



caching, SSI,...

lovely.remoteinclude

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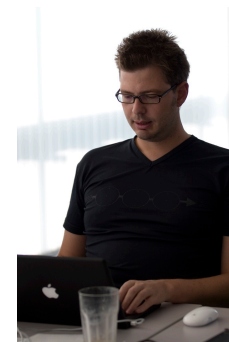


Thanks for your attention

the lovely performance crisis team

Jürgen, Bernd, Bernd
and Jodok

;-)



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Lovely

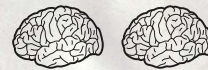
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SUPREME COURIER SERVICES
STANDARD CONTENTS
AUSTRIAN / GLOBAL FITTING
LOVELY SYSTEMS EST. 2005
WWW.LOVELYSYSTEMS.COM



WEB 1.0

ZOPE 2



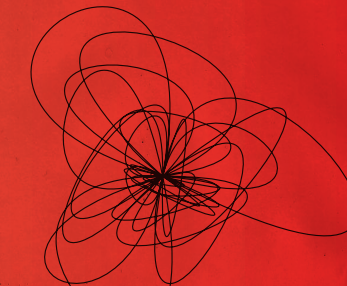
WEB 2.0

ZOPE 3



LOVELY SYSTEMS

**ONE STEP AHEAD
AND LOVELY INSIDE;
LOVELY SYSTEMS**



LOVELY SYSTEMS

CUT THIS OUT AND STICK IT TO YOUR COMPUTER



WZ-BFG.COM

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