

服务端性能测试报告

一. 准备测试数据

```
seven@localhost:~$ mongo 127.0.0.1:28001/openmind
MongoDB shell version: 3.2.4
connecting to: 127.0.0.1:28001/openmind
> db.auth('seven','lvYang_openmind_340_war')
1
>
> db.project_info.count()
2000000
>
> db.associate_info.count()
2000000
>
> db.stats()
{
  "db" : "openmind",
  "collections" : 7,
  "objects" : 4001031,
  "avgObjSize" : 238.18733221512156,
  "dataSize" : 952994900,
  "storageSize" : 295157760,
  "numExtents" : 0,
  "indexes" : 10,
  "indexSize" : 76820480,
  "ok" : 1
}
> █
```

利用 OpenMind/test/batch_insert_for_test.py 批量生成随机的测试数据：

项目数据记录数：2,000,000
消息数据记录数：2,000,000
索引占用大小：73 MB
数据总量大小：908 MB

二. 数据库进程状态

```
seven@localhost:~$ cat /proc/6403/status
Name:   mongod
State:  S (sleeping)
Tgid:   6403
Ngid:   0
Pid:    6403
PPid:   1781
TracerPid: 0
Uid:    1000    1000    1000    1000
Gid:    1000    1000    1000    1000
FDSize: 64
Groups: 4 24 27 30 46 113 128 1000
NStgid: 6403
NSpid:  6403
NSpgid: 6402
NSsid:  6402
VmPeak: 1164388 kB
VmSize: 1164380 kB
VmLck:   0 kB
VmPin:   0 kB
VmHWM:   970164 kB
VmRSS:   970164 kB
VmData: 1108432 kB
VmStk:    140 kB
VmExe:   28524 kB
VmLib:    4696 kB
VmPTE:    2052 kB
VmPMD:     12 kB
VmSwap:    0 kB
Threads: 19
```

占用虚拟地址空间 : 1137 MB
正在占用内存大小 : 947 MB
程序数据段大小 : 1082 MB

三. 项目分页浏览的 explain

```
> db.project_info.find({'pub_time':{'$lt:1478998765}}).limit(5).explain("allPlansExecution")['executionStats']
{
  "executionSuccess" : true,
  "nReturned" : 5,
  "executionTimeMillis" : 33,
  "totalKeysExamined" : 5,
  "totalDocsExamined" : 5,
  "executionStages" : {
    "stage" : "LIMIT",
    "nReturned" : 5,
    "executionTimeMillisEstimate" : 40,
    "works" : 6,
    "advanced" : 5,
    "needTime" : 0,
    "needYield" : 0,
    "saveState" : 2,
    "restoreState" : 2,
    "isEOF" : 1,
    "invalidates" : 0,
    "limitAmount" : 5,
    "inputStage" : {
      "stage" : "FETCH",
      "nReturned" : 5,
      "executionTimeMillisEstimate" : 40,
      "works" : 5,
      "advanced" : 5,
      "needTime" : 0,
      "needYield" : 0,
      "saveState" : 2,
      "restoreState" : 2,
      "isEOF" : 0,
      "invalidates" : 0,
      "docsExamined" : 5,
```

预估执行时间 : 40 ms
预估扫描记录 : 6 条
预估返回记录 : 5 条

实际执行时间 : 33 ms
实际扫描记录 : 5 条
实际返回记录 : 5 条

四. 项目分页浏览的并发测试

Thread Group

Name: thread_group

Comments:

Action to be taken after a Sampler error
☒ Continue ☐ Start Next Thread Loop ☐ Stop Thread ☐ Stop Test ☐ Stop Test Now

Thread Properties

Number of Threads (users): 1000

Ramp-Up Period (in seconds): 20

Loop Count: ☐ Forever 4

☐ Delay Thread creation until needed

☐ Scheduler

计划总共每个周期 1000 个请求，周期 20 秒，循环 4 次（即在 80 秒内完成 4000 个请求）

HTTP Request

Name: http_request

Comments:

Web Server

Server Name or IP: 127.0.0.1 **Port Number:** 80

Timeouts (milliseconds)
Connect: **Response:**

HTTP Request

Implementation: **Protocol [http]:** **Method:** POST **Content encoding:**

Path: /action

☐ Redirect Automatically ☒ Follow Redirects ☒ Use KeepAlive ☐ Use multipart/form-data for POST ☐ Browser-compatible headers

Parameters **Body Data**

Send Parameters With the Request:

Name:	Value	Encode?	Include Equals?
action_id	7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
page_size	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
time_max	1478954321	<input type="checkbox"/>	<input checked="" type="checkbox"/>

请求的地址，端口，路径，参数信息

View Results in Table

Name: result_table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Latency
3971	14:37:22.456	thread_group 1-9...	http_request	837		1396	837
3972	14:37:22.879	thread_group 1-9...	http_request	418		1396	418
3973	14:37:23.138	thread_group 1-9...	http_request	164		1396	164
3974	14:37:23.100	thread_group 1-9...	http_request	207		1396	207
3975	14:37:23.088	thread_group 1-9...	http_request	227		1396	227
3976	14:37:22.559	thread_group 1-9...	http_request	775		1396	775
3977	14:37:22.491	thread_group 1-9...	http_request	846		1396	846
3978	14:37:22.675	thread_group 1-9...	http_request	666		1396	666
3979	14:37:23.230	thread_group 1-9...	http_request	112		1396	112
3980	14:37:22.636	thread_group 1-9...	http_request	711		1396	711
3981	14:37:22.774	thread_group 1-9...	http_request	596		1396	596
3982	14:37:22.756	thread_group 1-9...	http_request	621		1396	621
3983	14:37:22.756	thread_group 1-9...	http_request	628		1396	628
3984	14:37:23.262	thread_group 1-9...	http_request	126		1396	126
3985	14:37:22.855	thread_group 1-9...	http_request	535		1396	535
3986	14:37:23.279	thread_group 1-9...	http_request	115		1396	115
3987	14:37:23.247	thread_group 1-9...	http_request	148		1396	148
3988	14:37:23.342	thread_group 1-9...	http_request	76		1396	76
3989	14:37:22.922	thread_group 1-9...	http_request	498		1396	498
3990	14:37:22.981	thread_group 1-9...	http_request	460		1396	460
3991	14:37:23.004	thread_group 1-9...	http_request	444		1396	444
3992	14:37:23.073	thread_group 1-9...	http_request	379		1396	379
3993	14:37:23.377	thread_group 1-9...	http_request	78		1396	78
3994	14:37:23.335	thread_group 1-9...	http_request	125		1396	125
3995	14:37:22.867	thread_group 1-9...	http_request	605		1396	605
3996	14:37:23.255	thread_group 1-1...	http_request	223		1396	223
3997	14:37:23.449	thread_group 1-9...	http_request	36		1396	36
3998	14:37:23.226	thread_group 1-9...	http_request	269		1396	269
3999	14:37:23.420	thread_group 1-9...	http_request	78		1396	78
4000	14:37:23.473	thread_group 1-9...	http_request	36		1396	36

☐ Scroll automatically? ☐ Child samples?

No of Samples 4000

Latest Sample 36

Average 1185

Deviation 514

这 4000 个请求，每个请求的完成状态，花费时间，流量等信息

Summary Report

Name: sum_report

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	KB/sec	Avg. Bytes
http_request	4000	1185	25	2068	514.04	0.00%	139.3/sec	189.87	1396.0
TOTAL	4000	1185	25	2068	514.04	0.00%	139.3/sec	189.87	1396.0

这 4000 个请求的统计信息：

最小花费

25

ms

最大花费

2068

ms

平均花费

1185

ms

平均流量

1396

B

错误率

0.00

%

每秒完成请求数

139

每秒流量

189.87

KB

五. 收取与我相关的消息的 explain

```
> db.associate_info.find({
... 'username' : "1473564193toiatyvgvcjpfbuu",
... 'time' : { $lt : 1473574756 }
... }).limit(5).explain("allPlansExecution")['executionStats']
{
  "executionSuccess" : true,
  "nReturned" : 5,
  "executionTimeMillis" : 41,
  "totalKeysExamined" : 5,
  "totalDocsExamined" : 5,
  "executionStages" : {
    "stage" : "LIMIT",
    "nReturned" : 5,
    "executionTimeMillisEstimate" : 40,
    "works" : 6,
    "advanced" : 5,
    "needTime" : 0,
    "needYield" : 0,
    "saveState" : 1,
    "restoreState" : 1,
    "isEOF" : 1,
    "invalidates" : 0,
    "limitAmount" : 5,
    "inputStage" : {
      "stage" : "FETCH",
      "nReturned" : 5,
      "executionTimeMillisEstimate" : 40,
      "works" : 5,
      "advanced" : 5,
      "needTime" : 0,
      "needYield" : 0,
      "saveState" : 1,
```

预估执行时间 : 40 ms
预估扫描记录 : 6 条
预估返回记录 : 5 条

实际执行时间 : 41 ms
实际扫描记录 : 5 条
实际返回记录 : 5 条

六. 收取与我相关的消息的并发测试

Thread Group

Name: thread_group

Comments:

Action to be taken after a Sampler error

☒ Continue

☐ Start Next Thread Loop

☐ Stop Thread

☐ Stop Test

☐ Stop Test Now

Thread Properties

Number of Threads (users): 1000

Ramp-Up Period (in seconds): 20

Loop Count: ☐ Forever 4

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计划总共每个周期 1000 个请求，周期 20 秒，循环 4 次（即在 80 秒内完成 4000 个请求）

HTTP Request

Name: http_request

Comments:

Web Server

Server Name or IP: 127.0.0.1

Port Number: 80

Timeouts (milliseconds)

Connect:

Response:

HTTP Request

Implementation: Protocol [http]: Method: POST Content encoding:

Path: /action

☐ Redirect Automatically ☒ Follow Redirects ☒ Use KeepAlive ☐ Use multipart/form-data for POST ☐ Browser-compatible headers

Parameters

Body Data

Send Parameters With the Request:

Name:	Value	Encode?	Include Equals?
action_id	13	<input type="checkbox"/>	<input checked="" type="checkbox"/>
page_size	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
time_max	1478954321	<input type="checkbox"/>	<input checked="" type="checkbox"/>

请求的地址，端口，路径，参数信息

View Results in Table

Name: res_table

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Latency
3971	14:53:25.163	thread_group 1...	http_request	130		1511	130
3972	14:53:25.046	thread_group 1...	http_request	254		1511	254
3973	14:53:25.208	thread_group 1...	http_request	97		1511	97
3974	14:53:25.174	thread_group 1...	http_request	131		1511	131
3975	14:53:25.092	thread_group 1...	http_request	224		1511	224
3976	14:53:25.199	thread_group 1...	http_request	117		1511	117
3977	14:53:25.163	thread_group 1...	http_request	162		1511	162
3978	14:53:25.156	thread_group 1...	http_request	176		1511	176
3979	14:53:25.200	thread_group 1...	http_request	138		1511	138
3980	14:53:25.264	thread_group 1...	http_request	78		1511	78
3981	14:53:25.014	thread_group 1...	http_request	330		1511	330
3982	14:53:25.197	thread_group 1...	http_request	153		1511	153
3983	14:53:25.264	thread_group 1...	http_request	94		1511	94
3984	14:53:25.256	thread_group 1...	http_request	114		1511	114
3985	14:53:25.222	thread_group 1...	http_request	151		1511	151
3986	14:53:25.256	thread_group 1...	http_request	123		1511	123
3987	14:53:25.257	thread_group 1...	http_request	129		1511	129
3988	14:53:25.114	thread_group 1...	http_request	276		1511	276
3989	14:53:25.301	thread_group 1...	http_request	93		1511	93
3990	14:53:25.213	thread_group 1...	http_request	184		1511	184
3991	14:53:25.278	thread_group 1...	http_request	125		1511	125
3992	14:53:25.359	thread_group 1...	http_request	44		1511	44
3993	14:53:25.374	thread_group 1...	http_request	38		1511	38
3994	14:53:25.257	thread_group 1...	http_request	158		1511	158
3995	14:53:25.333	thread_group 1...	http_request	83		1511	83
3996	14:53:25.394	thread_group 1...	http_request	40		1511	40
3997	14:53:25.282	thread_group 1...	http_request	154		1511	154
3998	14:53:25.352	thread_group 1...	http_request	86		1511	86
3999	14:53:25.397	thread_group 1...	http_request	41		1511	41
4000	14:53:25.436	thread_group 1...	http_request	17		1511	17

☐ Scroll automatically? ☐ Child samples? No of Samples 4000 Latest Sample 17 Average 225 Deviation 178

这 4000 个请求，每个请求的完成状态，花费时间，流量等信息

Summary Report

Name: sum_report

Comments:

Write results to file / Read from file

Filename

Browse...

Log/Display Only: ☐ Errors ☐ Successes

Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	KB/sec	Avg. Bytes
http_request	4000	225	16	1610	178.56	0.00%	127.0/sec	187.47	1511.0
TOTAL	4000	225	16	1610	178.56	0.00%	127.0/sec	187.47	1511.0

这 4000 个请求的统计信息：

最小花费 16 ms
最大花费 1610 ms
平均花费 225 ms
平均流量 1511 B
错误率 0.00 %
每秒完成请求数 127
每秒流量 187.47 KB

七. 数据库监控

```
> var recent_status = db.serverStatus()
>
> recent_status['extra_info']
{
  "note" : "fields vary by platform",
  "heap_usage_bytes" : 676399224,
  "page_faults" : 29
}
>
> recent_status['connections']
{ "current" : 1, "available" : 818, "totalCreated" : NumberLong(28116) }
>
```

最近 15 分钟内的监控信息 :

内存中的数据 : 645 MB
发生缺页中断 : 29 次
可用连接池 : 818 个连接

	query	update	delete	getmore	command	% dirty	% used	flushes	vsize	res	qr qw	ar aw	netIn	netOut	conn
*0	*0	*0	0	1 0	0.0	59.4	0	1.1G	947.0M	0 0	0 0	79b	18k	1	2016-09-11T15:26:30+08:00
*0	*0	*0	0	1 0	0.0	59.4	0	1.1G	947.0M	0 0	0 0	79b	18k	1	2016-09-11T15:26:31+08:00
*0	*0	*0	0	1 0	0.0	59.4	0	1.1G	947.0M	0 0	0 0	79b	18k	1	2016-09-11T15:26:32+08:00
112	*0	*0	0	607 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	104k	231k	41	2016-09-11T15:26:33+08:00
119	*0	*0	0	581 0	0.0	59.4	0	1.2G	947.0M	1 0	0 0	104k	233k	35	2016-09-11T15:26:34+08:00
137	*0	*0	0	698 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	124k	271k	43	2016-09-11T15:26:35+08:00
141	*0	*0	0	711 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	127k	277k	42	2016-09-11T15:26:36+08:00
157	*0	*0	0	797 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	141k	308k	49	2016-09-11T15:26:37+08:00
87	*0	*0	0	471 0	0.0	59.4	1	1.2G	947.0M	0 0	1 0	82k	184k	59	2016-09-11T15:26:38+08:00
144	*0	*0	0	679 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	125k	274k	40	2016-09-11T15:26:39+08:00
	query	update	delete	getmore	command	% dirty	% used	flushes	vsize	res	qr qw	ar aw	netIn	netOut	conn
132	*0	*0	0	667 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	118k	261k	48	2016-09-11T15:26:40+08:00
140	*0	*0	0	697 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	125k	274k	45	2016-09-11T15:26:41+08:00
142	*0	*0	0	702 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	126k	277k	41	2016-09-11T15:26:42+08:00
143	*0	*0	0	728 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	128k	282k	49	2016-09-11T15:26:43+08:00
175	*0	*0	0	857 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	155k	335k	35	2016-09-11T15:26:44+08:00
145	*0	*0	0	747 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	132k	287k	43	2016-09-11T15:26:45+08:00
143	*0	*0	0	719 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	127k	280k	48	2016-09-11T15:26:46+08:00
145	*0	*0	0	721 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	129k	282k	46	2016-09-11T15:26:47+08:00
146	*0	*0	0	736 0	0.0	59.4	0	1.2G	947.0M	0 0	1 0	132k	286k	46	2016-09-11T15:26:48+08:00
147	*0	*0	0	723 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	130k	285k	35	2016-09-11T15:26:49+08:00
	query	update	delete	getmore	command	% dirty	% used	flushes	vsize	res	qr qw	ar aw	netIn	netOut	conn
148	*0	*0	0	741 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	133k	290k	35	2016-09-11T15:26:50+08:00
149	*0	*0	0	747 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	133k	291k	40	2016-09-11T15:26:51+08:00
153	*0	*0	0	775 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	137k	300k	46	2016-09-11T15:26:52+08:00
151	*0	*0	0	746 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	135k	293k	41	2016-09-11T15:26:53+08:00
153	*0	*0	0	784 0	0.0	59.4	0	1.2G	947.0M	0 0	0 0	138k	301k	48	2016-09-11T15:26:54+08:00

在执行并发测试的时候的 mongostat 输出日志