

# LAB2 性能测试

苏维高

测试工具：ab-ApacheHTTPServer

测试网址：localhost:\_\_\_\_(不固定)/index.html

测试机器：ubuntu 32 位虚拟机 内存 1G 2 核 intel 八代 i5

测试结果：

请求数 1000 并发数 10

```
swg@swg-VirtualBox: ~  
Server Software:      My  
Server Hostname:      127.0.0.1  
Server Port:          8889  
  
Document Path:        /index.html  
Document Length:       115 bytes  
  
Concurrency Level:     10  
Time taken for tests:   0.941 seconds  
Complete requests:     1000  
Failed requests:        0  
Total transferred:     178000 bytes  
HTML transferred:      115000 bytes  
Requests per second:    1062.26 [#/sec] (mean)  
Time per request:       9.414 [ms] (mean)  
Time per request:       0.941 [ms] (mean, across all concurrent requests)  
Transfer rate:          184.65 [Kbytes/sec] received  
  
Connection Times (ms)  
      min      mean[+/-sd] median    max  
Connect:    0       0   0.2      0      3  
Processing:  1       9   7.0      7     54  
Waiting:    1       9   7.0      6     54  
Total:      1       9   7.1      7     54  
  
Percentage of the requests served within a certain time (ms)  
 50%      7  
 66%     10  
 75%     12  
 80%     13  
 90%     18  
 95%     22  
 98%     30  
 99%     36  
100%     54 (longest request)  
swg@swg-VirtualBox:~$
```

Requests per second 为 1062

对比百度 [www.baidu.com](http://www.baidu.com) 为 81.75

```
swg@swg-VirtualBox: ~  
Server Software:      BWS/1.1  
Server Hostname:      www.baidu.com  
Server Port:          443  
SSL/TLS Protocol:     TLSv1.2,ECDHE-RSA-AES128-GCM-SHA256,2048,128  
  
Document Path:        /  
Document Length:      227 bytes  
  
Concurrency Level:    10  
Time taken for tests:  12.232 seconds  
Complete requests:    1000  
Failed requests:      0  
Total transferred:    1081921 bytes  
HTML transferred:    227000 bytes  
Requests per second:  81.75 [#/sec] (mean)  
Time per request:     122.319 [ms] (mean)  
Time per request:     12.232 [ms] (mean, across all concurrent requests)  
Transfer rate:        86.38 [Kbytes/sec] received  
  
Connection Times (ms)  
            min  mean[+/-sd] median   max  
Connect:    65   92  15.6    91    153  
Processing:  20   29   8.1    28     73  
Waiting:    20   29   6.9    27     69  
Total:      87  122  20.3   119   216  
  
Percentage of the requests served within a certain time (ms)  
 50%    119  
 66%    128  
 75%    136  
 80%    139  
 90%    149  
 95%    158  
 98%    170  
 99%    175  
100%    216 (longest request)  
swg@swg-VirtualBox:~$
```

分析：我的网站比百度快得多，但这并不完全是并发程度高的原因，和网络也有很大联系。分析是本机地址访问本机，所以速度偏快。但另一方面，在 debug 的时候我加上了很多控制台输出指令，这在一定程度上拖慢了我的 server 响应速度。下面删去 output 进行测试。

```
swg@swg-VirtualBox: ~  
HTML transferred:      117000 bytes  
Requests per second:   2504.88 [#/sec] (mean)  
Time per request:      3.992 [ms] (mean)  
Time per request:      0.399 [ms] (mean, across all concurrent requests)  
Transfer rate:         440.31 [Kbytes/sec] received  
  
Connection Times (ms)  
      min      mean[+/-sd] median    max  
Connect:        0        0    0.1      0      1  
Processing:      0        4    2.2      3     16  
Waiting:         0        3    1.9      3     15  
Total:          1        4    2.2      4     16  
  
Percentage of the requests served within a certain time (ms)  
 50%    4  
 66%    4  
 75%    5  
 80%    5  
 90%    7  
 95%    8  
 98%   11  
 99%   12  
100%   16 (longest request)  
swg@swg-VirtualBox:~$
```

结果为 2504，快了整整一倍还多！

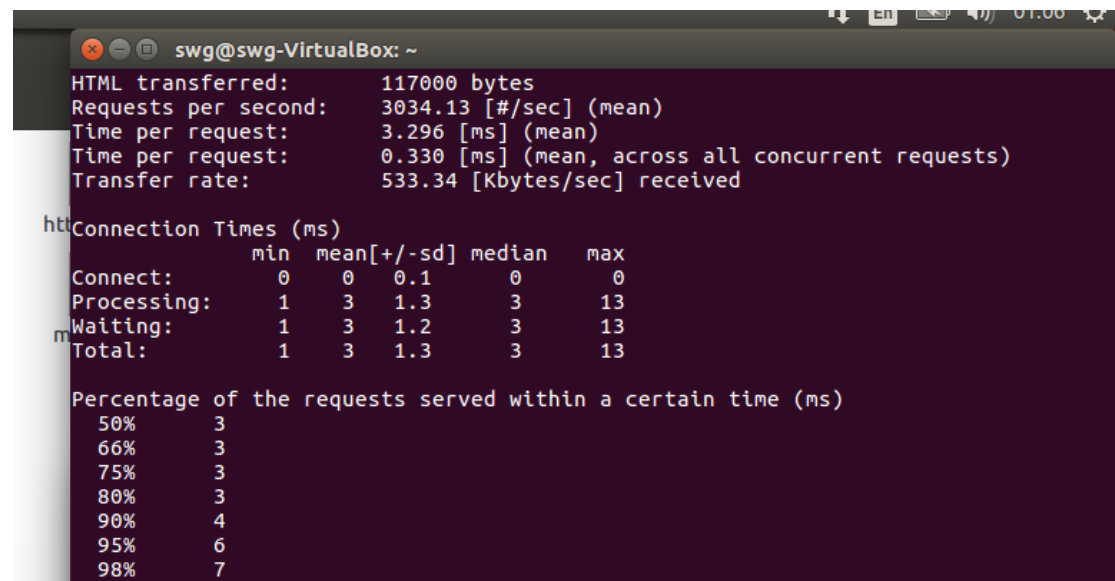
以上测试均在 2 核进行，考虑到特殊性，我决定增加系统核数至 6 核进行测试（条件有限，只能在本机上测试）

```
swg@swg-VirtualBox: ~  
Concurrency Level:      10  
Time taken for tests:    0.680 seconds  
Complete requests:      1000  
Failed requests:         0  
Total transferred:      180000 bytes  
HTML transferred:       117000 bytes  
Requests per second:     1470.94 [#/sec] (mean)  
Time per request:        6.798 [ms] (mean)  
Time per request:        0.680 [ms] (mean, across all concurrent requests)  
Transfer rate:           258.56 [Kbytes/sec] received  
  
Connection Times (ms)  
      min      mean[+/-sd] median    max  
Connect:        0        0    0.1      0      1  
Processing:      2        7    2.7      6     19  
Waiting:         1        6    2.5      5     18  
Total:          2        7    2.7      6     19  
  
Percentage of the requests served within a certain time (ms)  
 50%    6  
 66%    7  
 75%    8  
 80%    9
```

竟然发现效率变差了！并且这是多次测试后的稳定结果，两次测试

间隔很短，可以排除网络因素。

我百思不得其解，再次在 2 核条件下做测试，并降低线程数为 2



```
swg@swg-VirtualBox: ~  
HTML transferred:      117000 bytes  
Requests per second:   3034.13 [#/sec] (mean)  
Time per request:      3.296 [ms] (mean)  
Time per request:      0.330 [ms] (mean, across all concurrent requests)  
Transfer rate:         533.34 [Kbytes/sec] received  
  
httpConnection Times (ms)  
      min  mean[+/-sd] median  max  
Connect:    0      0   0.1      0      0  
Processing:  1      3   1.3      3     13  
Waiting:    1      3   1.2      3     13  
Total:      1      3   1.3      3     13  
  
Percentage of the requests served within a certain time (ms)  
 50%      3  
 66%      3  
 75%      3  
 80%      3  
 90%      4  
 95%      6  
 98%      7
```

发现 2 核 2 线程比 2 核 8 线程更快（符合 Lab1 的结论）

因此，我认为 6 核 8 线程较慢的原因是线程在不同核之间的切换浪费了时间（毕竟是虚拟机，线程调度情况复杂）。