

后端测试分为

- 并发测试

apache-jmeter-5.3

1. 100并发 毫无压力
2. 1000并发 丢包率低，勉强满足
3. 10000并发 丢包率很大，不满足

模拟用户上传

参见 [上传文件测试es6.html](#)

使用方法：

The screenshot displays the Apache JMeter GUI for a 'File Uploader' test. At the top, a progress bar indicates the current step: '就绪' (Ready) is active, followed by '选择文件' (Select File), '输入作业码' (Enter Job Code), '选择并发数' (Select Concurrency), '启用服务器监听' (Enable Server Monitoring), and '查看结果' (View Results). The '就绪' step is marked with a blue dot, while the others are grey.

The 'File Uploader' test element configuration is shown below the progress bar. It includes a '选择文件' (Select File) button and a text field for the file path, which currently contains 'Uo9tRt9hNsvXRMKYEYBbbw7bbw7bb'. Below this is a '并发数' (Concurrency) field set to '0'. There are two radio buttons: '暂停监听' (Pause Monitoring) and '快速上传' (Fast Upload), with '快速上传' being selected. A blue 'submit' button is located below the concurrency field. Underneath the 'submit' button is a label '提交作业数' (Submit Job Count) followed by '0 / 0'. Below this is a section for timing: '登录总用时' (Login Total Time) and '登录平均用时' (Login Average Time) both show '0 ms'. Similarly, '上传总用时' (Upload Total Time) and '上传平均用时' (Upload Average Time) both show '0 ms'. At the bottom, there is a label '服务器待处理作业' (Server Pending Jobs) followed by '0' and an upward arrow icon.

按顶部进度条一步一步进行：

1. 选择文件
2. 输入作业码
3. 选择并发数
4. 打开服务器监听
5. 点击上传



可见在100并发时，平均响应时间为 17.52 ms



可见在1000并发时，平均响应时间为 18.598 ms

- 接口测试

采用postman测试

测试代码:

```
1 ### login 测试
```

```
2 POST http://47.96.235.211:3000/login/ HTTP/1.1
3 content-type: application/json
4
5 {
6     "usr": "xzy",
7     "pwd": "xzyxzy"
8 }
9
10 ### 附件下载测试
11 POST http://47.96.235.211:3000/download_assignments_plus/ HTTP/1.1
12 content-type: application/json
13
14 {
15     "token":
16     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiIxODEwOTA4MDgiLCJwd2QiOiIxMjMlLCJpZGVudGlmeSI6MSwiY2xhc3NfbGlzdCI6IltcInNqMDAxXCIsXCJzajAwM1wiLFwic2owMDVcIixcIui9r-S7tumcg0axguWIhuaekOS4juuuvuiuoVwiXSIsIm5hbWUiOiIj7LmtIvngoAiLCJpYXQiOiE2MDU3MTQxMDIsImV4cCI6MTYwNTcxNTkwMn0.j2PH9QILYvR8AyzPxenoFscMS8cPDjhxc8Ji4PLW6n4",
17     "work_code":
18     "Uo9tRt9hNsvXRMKYEYBbbw7bbw7bbw4YB29tRt9hNs9bR6x1kPo8w8dXwUI8i8dTlScjVT6bjPI8wCJ0mDJSmEJGnDpatDtD",
19     "usr": "181090808"
20 }
21
22 ### login 测试
23 POST http://47.96.235.211:3000/login/ HTTP/1.1
24 content-type: application/json
25
26 {
27     "usr": "teacher1",
28     "pwd": "123"
29 }
30
31 ### 发布作业测试
32 POST http://47.96.235.211:3000/publish_assignments/ HTTP/1.1
33 content-type: application/json
34
35 {
36     "token":
37     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJhZG1pbiIsInB3ZCI6IjEyMyIsImlkZW50aWZ5IjowLCJpYXQiOiE2MDZMDY1ODQsImV4cCI6MTYwMTMwODM4NH0.3xMAZpzyuXg8mYRkKbsfzJ1H_cG7XWfzUSIQPz_VzOY",
38     "work_name": "第二次作业",
39     "work_desc": "作业具体描述, 巴拉巴拉巴拉"
40 }
41
42 ### 删除发布的作业测试
43 POST http://47.96.235.211:3000/delete_assignments HTTP/1.1
44 content-type: application/json
45
46 {
47     "token":
48     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJhZG1pbiIsInB3ZCI6IjEyMyIsImlkZW50aWZ5IjowLCJpYXQiOiE2MDZMDY1ODQsImV4cCI6MTYwMTMwMTM5MjkzN30.aa6seHTTKRy-GmSZrTuomZt-XN28DFqw0MRnq4ALQCU",
```

```
46     "work_code":
47     "Uo9tRt9hNsvXRMKYEY8n8YmYTsx1oQrx1YPMn1RcSYEY9XP6rfRY8i8dTlScjVT6bjPI8wCJ0mC
48     JcME3GoE38pDtD"
49 }
50 ### 上传文件
51 POST http://47.96.235.211:3000/submit_work/ HTTP/1.1
52 content-type: application/json
53 {
54     "token":
55     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJhZG1pbiIsInB3ZCI6IjEyMyIsIm
56     lkZW50aWZ5IjowLCJpYXQiOiJlMDE5MDA3NDMsImV4cCI6MTYwMTEwMjU0M30uZMoRT-
57     I5scCWJaBqZlR4Cy2GResn5tx2e8GyKP7d3K0",
58     "work_code":
59     "Uo9tRt9hNsvXRMKYEYBdhApak83chA7a1Ppak9eYB29tRt9hNs9bR6x1kPo8w8c5aRmbk8YmYTs
60     x1oQrx1qQMrb8ZenDZ0nC3avCpWmEJOsV1"
61 }
62 ### 下载文件
63 POST http://47.96.235.211:3000/download_assignments/ HTTP/1.1
64 content-type: application/json
65 {
66     "token":
67     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ0ZWJjaGVyMSIsInB3ZCI6IjEyMy
68     IsImlkZW50aWZ5IjowLCJjbGFzc19saXN0Ijoiw1wic2owMDFcIixcInNqMDAyXCJdIiwibmFtZS
69     I6IuWU10ilv-
70     i_quilvyIsImldCI6MTYwMzYzNjgyNywiZXhwIjoxNjAzNjM4NjI3fQ.1UdOmMvRYdmij_GSDDb
71     mMgtbBWVVoKdA8SyfsMxuvbk",
72     "work_code":
73     "Uo9tRt9hNsvXRMKYEY93wAx2jwAY08YmYTsx1oQrx1YPMn1RcSYEY9qPM5ZQ6LoCY8i8dTlScjV
74     T6bjPI8wCJ0mCp8vD3anC30oCND"
75 }
76 ### 获取已发布的作业列表
77 POST http://47.96.235.211:3000/get_published_assignments_list/ HTTP/1.1
78 content-type: application/json
79 {
80     "token":
81     "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ0ZWJjaGVyMSIsInB3ZCI6IjEyMy
82     IsImlkZW50aWZ5IjowLCJjbGFzc19saXN0Ijoiw1wic2owMDFcIixcInNqMDAyXCJdIiwibmFtZS
83     I6IuWU10ilv-
84     i_quilvyIsImldCI6MTYwMzYzNjgyNywiZXhwIjoxNjAzOTM5MjMyfQ.pVqF4zVMN334c57QeOH
85     AJRtmnuSlh1pwyPH3L2kjgdc",
86     "work_code":
87     "Uo9tRt9hNsvXRMKYEYBdhApak83chA7a1Ppak9eYB29tRt9hNs9bR6x1kPo8w8c5aRmbk8YmYTs
88     x1oQrx1qQMrb8ZenDZ0nCJ0mDpWnEJOtV1"
89 }
90 ### 获取详细作业信息
91 POST http://47.96.235.211:3000/get_assignments_detail/ HTTP/1.1
92 content-type: application/json
93 {
```

```

83     "token":
      "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ0ZWJjaGVyMSIsInB3ZCI6IjEyMy
      IsImlkZW50aWZ5IjowLCJjbGFzc19saXN0IjoiW1wic2owMDFcIixcInNqMDAyXCJdIiwibmFtZS
      I6IuWU10ilv-
      i_quilvyIsImldCI6MTYwMzkzNzQzMiwZlXhwIjoxNjAzOTM5MjMyfQ.pVqF4zVMN334c57QeOH
      AJRtmnuSlh1pwyPH3L2kjgdc",
84     "work_code":
      "Uo9tRt9hNsvXRMKYEYBfd83ci0BbY8Rcdf0jvfoVvBYjvBsSvBYQ8YmYTsx1oQrx1YPMnlRcSYE
      Y9uUdaYB29tRt9hNtHfRMKYEZ4sC3CuC38nEJOpcJDx1"
85 }
86
87 ### 修改密码
88 POST http://47.96.235.211:3000/reset_password/ HTTP/1.1
89 content-type: application/json
90
91 {
92     "token":
      "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ1c2VyIiwicHdkIjoiMDAwIiwiaW
      RlbnRpZnkiOiJEsImldCI6MTYwMTMwODkyMywiZlXhwIjoxNjAxMzEwNzIzZfQ.-
      V7LrcpKZGiAeZu_tpU0BxBtYfDhcw_5qRyb9TUtc",
93     "newPwd": "000"
94 }
95
96
97 ### 获取班级列表
98 POST http://47.96.235.211:3000/get_class_list/ HTTP/1.1
99 content-type: application/json
100
101 {
102
103     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJhZG1pbiIsInB3ZCI6I
      jEyMyIsImlkZW50aWZ5IjowLCJjbGFzc19saXN0IjoiWydzajAwMScsJ3NqMDAyJ10iLCJuYW11I
      jpudWxsLCJpYXQiOiJlMDIyMTM3MzgsImV4cCI6MTYwMjIxNTUzOH0.5vjgA8ejEfNc2cNsMUBGj
      0c2KVed6CjAIY_5Wo598bk"
104 }
105
106 ### 预览作业
107 POST http://47.96.235.211:3000/preview_assignment/ HTTP/1.1
108 content-type: application/json
109
110 {
111
112     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDePN8n8
      YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
113
114     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ0ZWJjaGVyMSIsInB3Z
      CI6IjEyMyIsImlkZW50aWZ5IjowLCJjbGFzc19saXN0IjoiW1wic2owMDFcIixcInNqMDAyXCJdI
      iwibmFtZSI6IuWU10ilv-
      i_quilvyIsImldCI6MTYwMzgwNzMwOSwiZlXhwIjoxNjAzODA5MTA5fQ.t8TEhfSJ3zdkULQng7K
      AnKY3--HQeDN1Ij0AGJLnStA",
115     "usr": "18109080"
116 }
117
118 ### 获取水印
119 POST http://47.96.235.211:3000/watermark_text_get/ HTTP/1.1
120 content-type: application/json
121
122 {

```

```
120     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
121     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
nI4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFgyIsImVudCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
122     "text": "18109080"
123 }
124
125 ### 设置水印
126 POST http://47.96.235.211:3000/watermark_text/ HTTP/1.1
127 content-type: application/json
128
129 {
130     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
nI4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFgyIsImVudCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
131     "text": "18109080"
132 }
133
134 ### 获取此作业码对应的学生上传的附件文件
135 POST http://47.96.235.211:3000/download_assignments_plus/ HTTP/1.1
136 content-type: application/json
137
138 {
139     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
nI4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFgyIsImVudCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
140     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
141 }
142
143 ### 获取此作业码对应的学生上传的附件文件
144 POST http://47.96.235.211:3000/download_assignments_plus/ HTTP/1.1
145 content-type: application/json
146
147 {
148     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
nI4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFgyIsImVudCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
```

```

149     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
150     "usr": "181090808"
151 }
152
153 ### 获取此作业码对应的所有学生账户名称
154 POST http://47.96.235.211:3000/get_stu_usr_by_workcode/ HTTP/1.1
155 content-type: application/json
156
157 {
158     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
n14enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFGyIsIm1hdCI6MTYwNmMwODU0NCwiZXhwIjojNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
159     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
160 }
161
162 ### 获取分数
163 POST http://47.96.235.211:3000/get_score/ HTTP/1.1
164 content-type: application/json
165
166 {
167     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
n14enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFGyIsIm1hdCI6MTYwNmMwODU0NCwiZXhwIjojNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
168     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
169     "usr": "181090808"
170 }
171
172 ### 打分
173 POST http://47.96.235.211:3000/grade_assignments/ HTTP/1.1
174 content-type: application/json
175
176 {
177     "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4e
n14enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-
S7tumcg0axguWIhuaekOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-
k0iHu-
WFGyIsIm1hdCI6MTYwNmMwODU0NCwiZXhwIjojNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMX
RKiyr6YxiQ5zcwaoE56M",
178     "work_code": "Uo9tRt9hNsvXRMKYEY8nCJ8pCp4YB29tRt9hNs9bR6x1kPo8w8dHb0MDDePN8n8
YmYTsx1oQrx1qQMrb8ZenDZ0pDZCnDpStCJWoV1",
179     "updateTarget": [
180         {usr: "181090808", score: 95},

```

```
181         {usr:"181090809",score:90}
182     ]
183 }
184
185 ### 获取学生详细信息
186 POST http://47.96.235.211:3000/grade_assignments/ HTTP/1.1
187 content-type: application/json
188
189 {
190     "token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4enl4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-S7tumcg0axguWIhuaeKOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-k0iHu-WFgyIsImIhdCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMXRKiyr6YxiQ5zcwaoE56M",
191     "usr":"181090807"
192 }
193
194 ### 获取学生详细信息
195 POST http://47.96.235.211:3000/grade_assignments/ HTTP/1.1
196 content-type: application/json
197
198 {
199     "token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c3IiOiJ4enkiLCJwd2QiOiJ4enl4enkiLCJpZGVudGlmeSI6MCwiY2xhc3NfbGlzdCI6IltcIui9r-S7tumcg0axguWIhuaeKOS4juuuvuiuoVwiLFwi5pWw5o2u57uT5p6EXCJdIiwibmFtZSI6IuW-k0iHu-WFgyIsImIhdCI6MTYwNjMwODU0NCwiZXhwIjoxNjA2MzEwMzQ0fQ.cxW_f0Ws5EFpKe6rmibnuMXRKiyr6YxiQ5zcwaoE56M",
200 }
201
202
```