

# telnet whu.edu.cn 25

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使用telnet用smtp协议从[2017302580224@whu.edu.cn](mailto:2017302580224@whu.edu.cn)向[786188853@qq.com](mailto:786188853@qq.com)发邮件

telnet过程:


```
220 whu.edu.cn Anti-spam GT for Coremail System (whu[20171226])
HELO WHU
250 OK
AUTH LOGIN
334 dXN1cm5hbWU6
MjAxNzMwMjU4MDIyNEB3aHUuZWRR1LmNu
334 UGFzc3dvcmQ6
235 Authentication successful
MAIL FROM: <2017302580224@whu.edu.cn>
250 Mail OK
RCPT TO: <786188853@qq.com>
250 Mail OK
DATA
354 End data with <CR><LF>.<CR><LF>
SUBJECT: TEST MESSAGE
FROM: <2017302580224@whu.edu.cn>
TO: <786188853@qq.com>

This is a test message.

250 Mail OK queued as AgBjCgBHTwMbynFels5SAA--.11916S2
```

QQ邮箱收到邮件:

## TEST MESSAGE ☆

发件人: **2017302580224** <2017302580224@whu.edu.cn> 

时 间: 2020年3月18日(星期三) 下午3:14

收件人: 786188853 <786188853@qq.com>

This is a test message.

# telnet maths.whu.edu.cn 80

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```

GET /xygk/xyjj.htm HTTP/1.1
Host: maths.whu.edu.cn

HTTP/1.1 200 OK
Date: Thu, 19 Mar 2020 14:53:36 GMT
Server: VWebServer
X-Frame-Options: SAMEORIGIN
Upgrade: h2c,h2
Connection: Upgrade
Last-Modified: Thu, 26 Dec 2019 02:19:19 GMT
Accept-Ranges: bytes
Content-Length: 26243
Vary: User-Agent,Accept-Encoding
Cache-Control: private, max-age=600
Expires: Thu, 19 Mar 2020 15:03:36 GMT
ETag: "6683-59a920135f5a1-gzip"
Content-Type: text/html
Content-Language: zh-CN

<?DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta http-equiv="X-UA-Compatible" content="ie=edge">
  <!-- <link rel="stylesheet" type="text/css" href="css/index.css" /> -->
  <link rel="stylesheet" type="text/css" href="css/list-content.css" />
  <script type="text/javascript" src="js/jquery-1.9.1.min.js"></script>
  <script type="text/javascript" src="js/index.js"></script>
  <title>妹ゑ眠澹ゞ 鏢板 涓庢枰璁? 闂?瀛?</title><META Name="keywords" Content="妹ゑ眠澹ゞ 鏢板 涓庢枰璁? 闂?瀛?">

```

服务器回复使用Wireshark抓包导出：

```

No.    Time           Source                Destination            Protocol Length Info
    54  1.654177       218.197.155.113       192.168.1.7            HTTP      817    HTTP/1.1 200 OK (text/html)
Frame 54: 817 bytes on wire (6536 bits), 817 bytes captured (6536 bits) on interface \Device\NPF_{7BE84AB2-
DABF-4EC3-9860-E635E5AA3182}, id 0
Ethernet II, Src: ChinaMob_d1:38:b1 (1c:41:76:d1:38:b1), Dst: HewlettP_e8:2d:0e (b4:b6:86:e8:2d:0e)
Internet Protocol Version 4, Src: 218.197.155.113, Dst: 192.168.1.7
Transmission Control Protocol, Src Port: 80, Dst Port: 8562, Seq: 25921, Ack: 56, Len: 751
[19 Reassembled TCP Segments (26671 bytes): #23(1440), #25(1440), #26(1440), #28(1440), #30(1440), #29(1440),
#36(1440), #33(1440), #37(1440), #35(1440), #38(1440), #43(1440), #47(1440), #44(1440), #46(1440), #50(1440),
#51(1440), #53(1440)]
Hypertext Transfer Protocol
  HTTP/1.1 200 OK\r\n
  Date: Thu, 19 Mar 2020 14:47:05 GMT\r\n
  Server: VWebServer\r\n
  X-Frame-Options: SAMEORIGIN\r\n
  Upgrade: h2c,h2\r\n
  Connection: Upgrade\r\n
  Last-Modified: Thu, 26 Dec 2019 02:19:19 GMT\r\n
  Accept-Ranges: bytes\r\n
  Content-Length: 26243\r\n
  Vary: User-Agent,Accept-Encoding\r\n
  Cache-Control: private, max-age=600\r\n
  Expires: Thu, 19 Mar 2020 14:57:05 GMT\r\n
  ETag: "6683-59a920135f5a1-gzip"\r\n
  Content-Type: text/html\r\n
  Content-Language: zh-CN\r\n
  \r\n
  [HTTP response 1/1]
  [Time since request: 0.314328000 seconds]
  [Request in frame: 21]
  [Request URI: http://maths.whu.edu.cn/xygk/xyjj.htm]
  File Data: 26243 bytes
Line-based text data: text/html (201 lines)

```

尝试使用telnet访问百度：

```

GET /index.html HTTP/1.1
Host: www.baidu.com

HTTP/1.1 200 OK
Accept-Ranges: bytes
Cache-Control: no-cache
Connection: keep-alive
Content-Length: 14615
Content-Type: text/html
Date: Thu, 19 Mar 2020 14:54:33 GMT
P3p: CP=" OTI DSP COR IVA OUR IND COM "
P3p: CP=" OTI DSP COR IVA OUR IND COM "
Pragma: no-cache
Server: BWS/1.1
Set-Cookie: BAIDUID=F4CA847B1594EE51AAB0BA2A4472EE25;FG=1; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com
Set-Cookie: BIDUPSID=F4CA847B1594EE51AAB0BA2A4472EE25; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com
Set-Cookie: PSTM=1584629673; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com
Set-Cookie: BAIDUID=F4CA847B1594EE51CECD6FC023DFFFC6;FG=1; max-age=31536000; expires=Fri, 19-Mar-21 14:54:33 GMT; domain=.baidu.com; path=/; version=1; comment=bd
Traceid: 1584629673042260762611848359687747287994
Vary: Accept-Encoding
X-UA-Compatible: IE=Edge,chrome=1

<!DOCTYPE html><!--STATUS OK-->
<html>
<head>
  <meta http-equiv="content-type" content="text/html; charset=utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=Edge">
  <link rel="dns-prefetch" href="//sl.bdstatic.com"/>
  <link rel="dns-prefetch" href="//t1.baidu.com"/>

```

抓包导出：

```

No.      Time                Source                Destination           Protocol Length Info
  32  0.993226          183.232.231.172      192.168.1.7           HTTP      1089    HTTP/1.1 200 OK (text/html)
Frame 32: 1089 bytes on wire (8712 bits), 1089 bytes captured (8712 bits) on interface \Device\NPF_{78EB4AB2-DABF-4EC3-9860-E635E5AA3182}, id 0
Ethernet II, Src: ChinaMob_d1:38:b1 (1c:41:76:d1:38:b1), Dst: HewlettP_e8:2d:0e (b4:b6:86:e8:2d:0e)
Internet Protocol Version 4, Src: 183.232.231.172, Dst: 192.168.1.7
Transmission Control Protocol, Src Port: 80, Dst Port: 8784, Seq: 14541, Ack: 50, Len: 1035
[12 Reassembled TCP Segments (15575 bytes): #18(1452), #19(20), #20(1452), #22(1452), #24(1452), #25(1452), #26(1452), #27(1452), #28(1452), #29(1452), #30(1452), #32(1035)]
Hypertext Transfer Protocol
  HTTP/1.1 200 OK\r\n
  Accept-Ranges: bytes\r\n
  Cache-Control: no-cache\r\n
  Connection: keep-alive\r\n
  Content-Length: 14615\r\n
  Content-Type: text/html\r\n
  Date: Thu, 19 Mar 2020 14:52:37 GMT\r\n
  P3p: CP=" OTI DSP COR IVA OUR IND COM " \r\n
  P3p: CP=" OTI DSP COR IVA OUR IND COM " \r\n
  Pragma: no-cache\r\n
  Server: BWS/1.1\r\n
  Set-Cookie: BAIDUID=55C11197C315B3D39A73C93F65AA113B;FG=1; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com\r\n
  Set-Cookie: BIDUPSID=55C11197C315B3D39A73C93F65AA113B; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com\r\n
  Set-Cookie: PSTM=1584629557; expires=Thu, 31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com\r\n
  Set-Cookie: BAIDUID=55C11197C315B3D34ACBDBDD17532059;FG=1; max-age=31536000; expires=Fri, 19-Mar-21 14:52:37 GMT; domain=.baidu.com; path=/; version=1; comment=bd\r\n
  Traceid: 1584629557080887681011656575263285730732\r\n
  Vary: Accept-Encoding\r\n
  X-UA-Compatible: IE=Edge,chrome=1\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.015364000 seconds]
[Request in frame: 16]
[Request URI: http://www.baidu.com/index.html]
File Data: 14615 bytes
Line-based text data: text/html (35 lines)

```

## 课本试题

P7.

在访问到对象服务器之前需要的时间为  $\sum_{i=1}^n RTT_i$ ，一个非持续连接在不考虑文档传输时间的情况下需要两个  $RTT_0$ ，故总时间为  $\sum_{i=1}^n RTT_i + RTT_0$

P8.

a. 使用非持续性连接时，每个小对象都需要两个  $RTT_0$ ，包括html文件本身共有9个对象，需要18个  $RTT_0$ ，因此总时间为  $\sum_{i=1}^n RTT_i + 18RTT_0$

b. 传输该html文件需要  $2RTT_0$ ，除html文件外，一共有8个对象，有5个并行连接即可同时建立5个TCP连接，则需要分两次建立并行连接，因此传输这些小对象需要  $4RTT_0$ ，总时间为  $\sum_{i=1}^n RTT_i + 6RTT_0$

c. 持续性连接时，首先需要用  $2RTT_0$  时间建立连接，然后用  $RTT_0$  时间请求该html文件以及8个小对象，用  $RTT_0$  时间接收这些文件，总时间为  $\sum_{i=1}^n RTT_i + 3RTT_0$