GNU Proxyknife 1.7

The customizable proxyhunter
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1 Introduction

GNU Proxyknife is a customizable multithread *proxy hunter*. Tt can help users behind strict firewall find suitable free proxies.

GNU Proxyknife reads *proxylist*[1] from the file, stdin or the web, then validates the free proxies and prints the good ones. Time intervals and the others which are userful to estimate the speed or capability of every proxy are also printed. The whole processing can be customized by the user, which is different from the other hunters.

In URL mode, Proxyknife can read a large number of proxies on machines with little memory. Tt works on GNU/Linux, SunOS, OSF1 or more.

As a proxy hunter, Proxyknife can validate all kinds of proxies with different methods: HTTP proxy with GET or CONNECT method, SOCKS5 proxy with CONNECT command, SOCKS4 proxy with CONNECT command. As a customizable extension, it can check proxies for special purpose, such as finding tunnels for MSN chatting.

Proxyknife can check proxies via a tunnel. The tunnel can be SOCKS4 proxy, SOCKS5 proxy or HTTP proxy, with or without authentication for the latter two. The route from the local machine that proxyknife runs on to *checksite* is:

```
proxyknife -------- (myproxy) ------ testproxy ----- checksite
```

Here *myproxy* is the tunnel, *testproxy* is the free proxy being checked and *checksite* is the site used to validate free proxies.

Proxyknife have many features. Please see the file '`FEATURELIST`' included in this package for details.

[1] The list of free proxies.

2 Invoking

Invoke `proxyknife` like this:

```
./proxyknife [OPTION]...
```

If proxyknife is invoked without arguments, it will read proxylist from the file named '`proxylist`' in the current directory. The result will be written to a file named '`proxyout`' in the current directory, together with the verbose output on screen.

To change the default parameters, switch the mode or invoke it for special purpose, you can do it in two ways: permanatly, add the setting to the '`start file`' (see Chapter 7 [Startup File], page 10), or specifying it on the command line. You can also specify the '`startup file`' (see Chapter 7 [Startup File], page 10) on the command line.

Some constants in the souce code:

```
#define HTTP_GET 0
#define HTTP_CONNECT 1
#define SOCKS5_CONNECT 2
#define SOCKS4_CONNECT 5
#define HTTP_CONNECT_AUTH  11
#define SOCKS5_CONNECT_AUTH 12
#define DIRECT 21
#define IN_FILE 0
#define IN_HTTP 1
#define LOGSTDERR "."
```

Please use the value but not the former string on command line or in '`startup file`' (see Chapter 7 [Startup File], page 10).

2.1 Command-line Exclusive Options

'`-V`'
'`--version`'
: Display the version of Proxyknife and exit.

'`--help`'
: Print all command-line options.

'`-f` *file*'
: Use *file* as '`startup file`' (see Chapter 7 [Startup File], page 10). Without this option, proxyknife will try '`./proxyknife.conf`', then '`$HOME/.proxyknife.conf`', at last '`$prefix/etc/proxyknife.conf`'[1].

2.2 Startup Options

Anyone of the following options have a '`keyword`' form which can be specified in '`startup file`' (see Chapter 7 [Startup File], page 10). In this section, every single option is followed by a '`keyword`'.

If you have duplicate options on command line or settings in '`startup file`' (see Chapter 7 [Startup File], page 10), only the first one will be used. Anyway, do not let this happen if possible.

'`-d`'
'`debug`'
: Turn on debug output.

  Argument after this option is not required and should be completely omitted on command line. If this option exists, the value will be set to *1* automatically.

[1] $prefix is the argument passed to the configure script: '`./configure --prefix=/some/path`'. Tt is '`/`' by default.

While in startup file, use '`debug=1`' to turn on debug output. '`debug=0`' to disable it. The value is *0* by default.

'`-t` *threads*'
'`threads`' The number of threads opened at the same time. This should be based on the resource avaliable on your system. The number can't be more than 65535. On the other hand, though nocache header is used, running proxyknife with less threads may give more accurate result. Default: *50*.

'`-g` *user_agent*'
'`user_agent`'
Identified as browsers or other clients. Default: '`User-Agent: MSIE 6.0`'

'`-I` *proxyknifetype*'
'`proxyknifeintype`'
The mode of input. 0: file mode, 1:url mode. In file mode, proxyknife will regard the value of keyword '`proxyknifein`' or the argument after option '`-i`' as filenname; otherwise, in url mode, they are parsed as part of URL. Now only two sites are available in url mode: *proxylist.kmip.net/list.html* and *youth.bupt.edu.cn/proxy/*.

By default, proxyknife will read file '`proxylist`' in current directory in file mode and fetch proxylist from `http://proxylist.kmip.net/list.html` in url mode.

Default: *0*

'`-i` *proxyknifein*'
'`proxyknifein`'
The input filename with full path which proxyknife read proxylist from or the url to the proxylist file. Let it be `"-"` to read from stdin. In url mode, this value can be '`proxylist.kmip.net/list.html`' or '`youth.bupt.edu.cn/proxy/`'. I haven't try the other sites. In url mode, proxyknife may connect to the web via *myproxy*, which is based on the value of '`mytype`'. Default: '`proxylist`' or '`proxylist.kmip.net/list.html`'

'`-m` *mytype*'
'`mytype`' The type of myproxy. If enabled, proxyknife will send all request via it. It should be enabled for lan users after a proxy tunnel. The value can be: 1 (HTTP_CONNECT - HTTP proxy without authentication), 2 (SOCKS5_CONNECT - SOCKS5 proxy without authentication), 5 (SOCKS4_CONNECT - SOCKS4 proxy without authentication), 11 (HTTP_CONNECT_AUTH - HTTP proxy with basic authentication), 12 (SOCKS5_CONNECT_AUTH - SOCKS5 proxy with username/password authentication), 21 (DIRECT - Disabled, connect to *testproxy* directly). Default: *21*

'`-h` *myhost*'
'`myhost`' The IPV4 address or host name of myproxy. This will be in effect only if mytype !=21 Default: *NULL*[2]

'`-p` *myport*'
'`myport`' The port of myproxy. This will be used if mytype !=21 Default: *NULL*

'`-u` *myuser*'
'`myuser`' The username for myproxy. This will be used only if '`mytype`'=*11* or *12*. Default: *NULL*

'`-s` *mypass*'
'`mypass`' The password for myproxy. This will be used only if '`mytype`'=*11* or *12*. Default: *NULL*

[2] In this section, '`NULL`' means there is no default value for that *keyword*.

'`-c checksite`'
'`checksite`'
: The site used to check testproxies. Default: '`http://www.google.com:80/webhp?hl=en`'

'`-C checkreqin`'
'`checkreqin`'
: The file including the customized request. Default: *NULL*

'`-k key`'
'`key`'
: The string that should be found in the response after a successful request to the *checksite*. Default: '`2006 Google`'

'`-r rcvtimeo`'
'`rcvtimeo`'
: The socket receiving timeout in seconds. Default: *10*

'`-n sndtimeo`'
'`sndtimeo`'
: The socket sending timeout in seconds. Default: *5*

'`-S myconreplysize`'
'`myconreplysize`'
: The size of buffer used to store the reply after sending CONNECT request for testproxy to myproxy. This is used for some weird proxies. Please leave it intact if unsure. Default: *256*

'`-T testconreplysize`'
'`testconreplysize`'
: The size of buffer used to store the reply after sending CONNECT request for *checksite* to testproxy. It is only be used when you validate HTTP CONNECT proxies. Just as above, do not change it if unsure. Default: *256*

'`-G testtagreplysize`'
'`testtagreplysize`'
: The size of buffer used to store the reply after sending GET request to the *checksite*. Proxyknife will try to find the *key* from this buffer. Default: *65535*

'`-H httptestmethod`'
'`httptestmethod`'
: The HTTP method sent to the *testproxy*. The possible values are 0 (HTTP_GET) and 1 (HTTP_CONNECT) now. If you need a HTTP proxy supporting CONNECT, just set it to 1. Default: *0*

'`-5 socks5testmethod`'
'`socks5testmethod`'
: The socks5 command used in the interaction with the *testproxy*. Only 2(SOCKS5_CONNECT) is implemented. You should leave it intact now. Default: *2*

'`-4 socks4testmethod`'
'`socks4testmethod`'
: The socks4 command used in the interaction with the *testproxy*. Only 5(SOCKS4_CONNECT) is implemented. You should leave it intact now. Default: *5*

'`-l logfilename`'
'`logfilename`'
: The logfile with full path. If you prefer screen output, use a single '`.`' ('`.`' is just before ⟨LF⟩) to leave stderr as it is:

```
proxyknife -l .
```

or add this to startup file:

```
logfilename=.
```

If you want to see it later:

```
proxyknife -l ./proxyknife.log
```

or add this to startup file:

```
logfilename=./proxyknife.log
```

Default: '`proxyknife.log`'

'`-o` *`proxyknifeout`*'
'`proxyknifeout`'
: The output file with full path. Proxyknife print result to this file. If you do not specify it, proxyknife will use a file named '`proxyout`' in the current directory. If this file do not exists, proxyknife will creat it. Otherwise, it will be overridden. Default: '`proxyout`'

3 General Usage

Read the proxylist from local file '`/tmp/mylist.txt`':

```
proxyknife -i /tmp/mylist.txt
```

Do the same with 100 threads:

```
proxyknife -i /tmp/mylist.txt -t 100
```

Find http proxy supporting CONNECT:

```
proxyknife -i /tmp/mylist.txt -H1
```

Find http proxy supporting ftp with GET method:

```
proxyknife -i /tmp/myhttplist.txt -c 'ftp://somesite/' -k 'pub'
```

Print the result to a file named '`myoutput.txt`'

```
proxyknife -i /tmp/mylist.txt -o myoutput.txt
```

Check the newlist again with CONNECT checking for the HTTP proxies:

```
proxyknife -i ./myoutput.txt -H1
```

Identify as firefox 2.0:

```
proxyknife -g 'Mozilla/5.0 (X11; U; Linux i686; en-US; rv:1.8.1) Gecko/20061010 Firefox/2
-i /tmp/mylist.txt
```

Print more to screen:

```
proxyknife -i /tmp/mylist.txt -o . -d
```

Tips:

1. You can type *`Control-c`* to stop proxyknife at any time without losing the result.
2. You can create several '`startup files`' (see Chapter 7 [Startup File], page 10) to fit for different need and invoke them with '`-f`' option.
3. For default installation, proxyknife use '`/etc/proxyknife.conf`' as '`startup file`'. For all users, you can create .proxyknife.conf at their home directories. Thus they will have their own default '`startup files`' , independent of '`/etc/proxyknife.conf`'.

4 Download Proxylist

As a test, proxyknife can download the *proxylist* from the web automatically and extract the proxylist embed in the web. After the download is completed, the validating begin. Now only two sites are supported:

Using `http://proxylist.kmip.net/list.html`.

```
proxyknife -I1
```

Using `http://youth.bupt.edu.cn/proxy/`.

```
proxyknife -I1 -i 'youth.bupt.edu.cn/proxy/'
```

5 Via Proxy

- If you have a HTTP proxy (hostname:*myproxy.com*, port:*8080*, used as *myproxy*) with basic authentication (username:*userabc*, password:*pass12345*), you want to download proxylist from `http://youth.bupt.edu.cn/proxy/` via this proxy and validate the free proxies via the same HTTP proxy:

  ```
  proxyknife -I1 -i 'youth.bupt.edu.cn/proxy/' -m11 \
  -h myproxy.com -p 8080 -u userabc -s 'pass12345'
  ```

  Is it too long? Then write these to startup file (see Chapter 7 [Startup File], page 10):

  ```
  mytype=11
  myhost=myproxy.com
  myport=8080
  myuser=userabc
  mypass=pass12345
  proxyknifeintype=1
  proxyknifein=youth.bupt.edu.cn/proxy/
  ```

  After that, invoke proxyknife without arguments will do the same thing:

  ```
  proxyknife
  ```

- If you have a HTTP proxy (*myproxy.com:8080*) without authentication, do it like this:

  ```
  proxyknife -I1 -i 'youth.bupt.edu.cn/proxy/' -m1 -hmyproxy.com -p 8080
  ```

- If your *myproxy* is a SOCKS4 tunnel with host name '`myproxy.com`', port '`1080`' and you can reach `http://proxylist.kmip.net/list.html` via it:

  ```
  proxyknife -I1 -m5 -hmyproxy.com -p1080
  ```

- If your *myproxy* is a SOCKS5 tunnel with host name *myproxy.com*, port *1080*. You hope proxyknife reads proxylist from the local file named '`proxylist`' and validates via *myproxy*:

  ```
  proxyknife -m2 -hmyproxy.com -p1080
  ```

- If your *myproxy* (*myproxy.com:1080*, *userabc:pass123*) is a SOCKS5 tunnel based on username/password authentication with host name '`myproxy.com`', port '`1080`', you can invoke proxyknife like this to do the same thing:

  ```
  proxyknife -m12 -hmyproxy.com -p1080 -u'userabc' -p'pass123'
  ```

6 Customize Request

Proxyknife can send customized request, that is to say, you can even check some unknown services with it.

I write a sample file named '`msn.req`', which is included in this package. With this file, you can check whether a proxy can work as a MSN tunnel, that is to say, whether you can do MSN chatting via that proxy.

```
proxyknife -I1 -H1 -c messenger.hotmail.com:1863 -C msn.req -k `cat msn.req`
```

7 Startup File

Every Startup Option (see Section 2.2 [Startup Options], page 2) can be added to '`startup file`' using the '`keyword`' listed after it on that section (see Section 2.2 [Startup Options], page 2).

For instance, you can replace '`-t 20`' with the setting:

```
threads=20
```

Then you can remove '`-t 20`' from the command line.

The syntax of startup file:

1. The data is in the form of '`keyword=value`', start from the beginning of that line.
2. Write '`keyword=value`' in a single line.
3. All characters will be parsed except ⟨LF⟩. **Please do not add redundant whitespace or quotation mark, they will be read as part of '`keyword=value`' pair**. But it is permitted to use whitespace or quotation mark in '*value*' if it is really needful:

   ```
   user_agent=User-Agent: MSIE 6.0
   ```
4. Comment line *begin* with '`#`'. Certainly, the line begins with string different from anyone of the startup keywords (see Section 2.2 [Startup Options], page 2) will be identified as comment line or ignored.

If you invoke proxyknife with a startup option (see Section 2.2 [Startup Options], page 2), the setting relation to it in '`startup file`' will be overridden.

By default, proxyknife will search the startup file in this order until one of them is found:

1. '`./proxyknife.conf`'
2. '`$HOME/.proxyknife.conf`'
3. '`$prefix/etc/proxyknife.conf`'

You can invoke proxyknife with '`-f 'startup file'`' (see Section 2.2 [Startup Options], page 2) to override that:

```
proxyknife -f /tmp/mystartup.txt
```

7.1 Examples of startup file

- Conditions: A direct connection to `http://proxylist.kmip.net/list.html`.

  Want to validate: Free HTTP proxy supporting CONNECT method, free SOCKS5 or SOCKS4 proxy supporting CONNECT command.

  Your '`startup file`' should look like this:

  ```
  #Connect to proxies to be checked directly.
  #For http proxies, try to check with connect method.
  mytype=21
  httptestmethod=1
  proxyknifeintype=1
  ```

- Conditions: A HTTP proxy('`www.myhttptunnel.com:8080`',supporting CONNECT method) with basic authentication . The username is '`abc`', the password is '`123`'. A connection to `http://youth.bupt.edu.cn/proxy/` or free proxies can be done via this HTTP proxy.

  Want to validate: Free HTTP, SOCKS5 or SOCKS4 proxy that can be used as *MSN tunnel*.

  The content of your '`startup file`' will be:

```
#Check http,socks5,socks4 proxies with customized request: msn.req.
#Check is done via a tcp tunnel(http proxy).
mytype=11
myhost=www.myhttptunnel.com
myport=8080
myuser=abc
mypass=123
httptestmethod=1
checksite=messenger.hotmail.com:1863
checkreqin=msn.req
key=VER 0 MSNP8 CVR0
proxyknifeintype=1
proxyknifein=youth.bupt.edu.cn/proxy/
```

- Conditions: A HTTP proxy('`www.somehttpproxy.com:8080`') without authentication. A connection to free proxies can be done via this HTTP proxy. A file named '`proxylist`' including the list of free proxies is in the current directory.

  Want to validate: Free HTTP proxy with common GET method, SOCKS5 or SOCKS4 proxy with CONNECT command.

  You can write these to your '`startup file`':

  ```
  #Check http proxies with GET method.
  #Checking is done via a tcp tunnel(here http proxy).
  mytype=1
  myhost=www.somehttpproxy.com
  myport=8080
  ```

- Conditions: A SOCKS5 proxy ('`socks.you.com`') with username/password authentication. The port of socks5 service is *1080*, the username is '`phc`', the password is ''`678`''. The connection to `http://youth.bupt.edu.cn/proxy/` or free proxies can be done via this SOCKS5 tunnel.

  Want to validate: Common free HTTP proxy, free socks5 or socks4 proxy which support connect command.

  Your setting should be similiar with this:

  ```
  #Find http proxies with GET method, socks4/socks5 proxies with connect cmd
  #All is done via a tcp tunnel(socks5 proxy) with username/password auth.
  mytype=12
  myhost=socks.you.com
  myport=1080
  myuser=phc
  mypass=678
  proxyknifeintype=1
  proxyknifein=youth.bupt.edu.cn/proxy/
  ```

- Here is the default '`startup file`' full of comments:

  ```
  #The number of threads
  #threads=50
  #Turn on debug1 to debug, 0 to disable it.
  #debug=0
  #The meaning of some constants(These aren't keyword, only reference):
  #define HTTP_GET 0
  #define HTTP_CONNECT 1
  #define SOCKS5_CONNECT 2
  #define SOCKS4_CONNECT 5
  ```

```
#Send CONNECT request to http proxy with authentication
#define HTTP_CONNECT_AUTH  11
#Send CONNECT request to socks5 proxy with authentication
#define SOCKS5_CONNECT_AUTH 12
#Do not use myproxy
#define DIRECT 21
#The value of mytype must be 1,2,5,11,12 or 21 now, as defined above
#mytype=21
#myhost=www.somehttpproxy.com
#myport=8080
#Authenticate
#myuser=username
#mypass=password
#The site used to validate free proxies
#checksite=http://www.google.com:80/webhp?hl=en
#For msn
#checksite=messenger.hotmail.com:1863
#key=2006 Google
#For msn
#key=VER 0 MSNP8 CVR0
#Some references
#define HTTP_GET 0
#define HTTP_CONNECT 1
#define SOCKS5_CONNECT 2
#define SOCKS4_CONNECT 5
#The value of httptestmethod can only be 1 or 0 now.
#httptestmethod=0
#Must be 2 now, do not change it
#socks5testmethod=2
#Must be 5 now, do not change it
#socks4testmethod=5
#Size of buffer used to receive reply after sending CONNECT req to myproxy
#myconreplysize=256
#Size of buffer used to receive reply after sending CONNECT req to testproxy.
#testconreplysize=256
#The size of buffer used to store data from the target. Key was searched in it.
#testtagreplysize=65535
#Identify as
#user_agent=User-Agent: MSIE 6.0
#Specify the receiving timeout, in seconds, 0 to disable
#rcvtimeo=10
#Specify the sending timeout, in seconds, 0 to disable
#sndtimeo=5
##define LOGSTDERR "."
#Redirect stderr to log file. Use "." to leave stderr as it is.
#logfilename=.
#logfilename=proxyknife.log
#Reference
#define IN_FILE 0
#define IN_HTTP 1
#The type of proxyknifein or the mode of Proxyknife. 0:file,1:http.
#proxyknifeintype=0
```

```
#The proxylist file or url with full path
#File mode:
#proxyknifein=proxylist
#Read from stdin:
#proxyknifein=-
#In url mode, only these two sites are tested. Select one of them.
#proxyknifein=proxylist.kmip.net/list.html
#proxyknifein=youth.bupt.edu.cn/proxy/
#Print the result to this file with full path
#proxyknifeout=proxyout
#Customize the request
#checkreqin=msn.req
```

8 Sort the Result

Here is a sample of the result (The result is included in '`proxyout`' by default):

```
222.216.109.55:3128@HTTPC 0.032189 0.126676 0.161449 0.034833 HTTP:GET
64.34.113.100:80@HTTPC 0.372466 0.367725 1.555638 0.375829 HTTP:GET
59.41.253.35:80@HTTPC 0.025951 4.463531 0.687924 1.077910 HTTP:GET
```

The format is described in section Output (see Chapter 11 [Output], page 17).

Now type '`bash`', then you can sort the result like the following:

- To sort by the response speed:

  ```
  sort -nk 4 proxyout
  ```

  The output:

  ```
  222.216.109.55:3128@HTTPC 0.032189 0.126676 0.161449 0.034833 HTTP:GET
  59.41.253.35:80@HTTPC 0.025951 4.463531 0.687924 1.077910 HTTP:GET
  64.34.113.100:80@HTTPC 0.372466 0.367725 1.555638 0.375829 HTTP:GET
  ```

- To sort by the transfer speed: (This is not accurate for response with small data)

  ```
  sort -nk 5 proxyout
  ```

  The output:

  ```
  222.216.109.55:3128@HTTPC 0.032189 0.126676 0.161449 0.034833 HTTP:GET
  64.34.113.100:80@HTTPC 0.372466 0.367725 1.555638 0.375829 HTTP:GET
  59.41.253.35:80@HTTPC 0.025951 4.463531 0.687924 1.077910 HTTP:GET
  ```

- To sort by the total delay:

  ```
  cat proxyout |while read  proxy a b c d req;\
  do  echo $proxy $a $b $c $d `echo $a+$b+$c+$d|bc` $req;done  |\
  sort -nk 6
  ```

  The output:

  ```
  222.216.109.55:3128@HTTPC 0.032189 0.126676 0.161449 0.034833 .355147 HTTP:GET
  64.34.113.100:80@HTTPC 0.372466 0.367725 1.555638 0.375829 2.671658 HTTP:GET
  59.41.253.35:80@HTTPC 0.025951 4.463531 0.687924 1.077910 6.255316 HTTP:GET
  ```

9 Scripts

Replace user_agent with another HTTP header, such as Cookie:

```
proxyknife -g 'Cookie: var=value; var2=someting'
```

Create proxylist on-the-fly. In this example proxyknife scans free proxies with ip ranging from 127.0.0.1 to 127.0.0.254, the checked port is 3128:

```
bash
$ for ((i=1;i<255;i++));do echo 127.0.0.$i:3128@HTTP;done|proxyknife -i -
```

With the customized request, you can do more things.

SSH scan:

```
echo "127.0.0.1:22"|proxyknife -i- -I0 -H0 -C ssh.req -k mismatch
```

Do the same scan via the free proxy 127.0.0.5:

```
echo "127.0.0.5:3128"|proxyknife -i- -I0 -H1 -C ssh.req -c 127.0.0.1:22 -k mismatch
```

10 Proxylist

The content of proxylist should be like this:

```
ip:port@proto.*
```

or

```
ip:port
```

I remove support on domain, so ip must be IPV4 address. The port must be integer range from 1 to 65535. The proto can only be HTTP,http,socks5,SOCKS5,socks4 or SOCKS4. All of the chars afterproto will be ignored.

If there is no `@` or other chars after the port in the line,proto is regarded as HTTP by default.

Example:

```
61.132.89.130:80@HTTP
202.123.52.156:8080
```

11 Output

Every line of the result is in the form of '`host:port@PROTOCOLMETHOD` *`estab pcon end req`*'.A sample of the output:

```
222.216.109.55:3128@HTTPC 0.032189 0.126676 0.161449 0.034833 HTTP:GET
64.34.113.100:80@HTTPC 0.372466 0.367725 1.555638 0.375829 HTTP:GET
59.41.253.35:80@HTTPC 0.025951 4.463531 0.687924 1.077910 HTTP:GET
```

By default, proxyknife use the default testmethod, the req field will be filed with '`HTTP:GET`' now. If you use your own testmethod with '`-C msn.req`' (see Section 2.2 [Startup Options], page 2) (see Chapter 6 [Customize Request], page 9) on command line or '`checkreqin=msn.req`' in '`startup file`' (see Chapter 7 [Startup File], page 10), this field will be filled with the argument or value, the filename of the request file, which is 'msn.req' in this case.

The current version of proxyknife output timeouts of every steps of validation:

Method	**Output (time increase ->)**
HTTP_GET	host:port@HTTPG estab 0 pget end req
HTTP_CONNECT	host:port@HTTPC estab pcon get end req
SOCKS5_CONNECT	host:port@SOCKS5C estab pcon get end req
SOCKS4_CONNECT	host:port@SOCKS4C estab pcon get end req

The chart of validating:

```
Proxyknife  -- (myproxy) --- testproxy -- target(checksite)
ta   ---------------->
            estab = tb - ta
tb   <----------------
tc   ------------------------------>
            pcon = td - tc  HTTP_CONNECT,SOCKS5_CONNECT or SOCKS4_CONNECT.
td   <------------------------------
te   ------------------------------>
            (p)get = tf - te  get:HTTP_CONNECT,SOCKS5_CONNECT,SOCKS4_CONNECT,
                              pget:HTTP_GET
tf   <------------------------------
tg   ------------------------------>
            end = th - tg
th   <------------------------------
```

The meaning of symbols in the chart:

symbol	**meaning**
–	start to send, the left string is time.(such as ta)
<-	The data entered,the left string is the time when data come in.
ta tb tc td te tf tg	coordinate time in seconds during a single validating

delay	**define**
estab	Delay from the time(ta) proxyknife send CONNECT request for *testproxy* to *myproxy*(or begin to connect to *testproxy directly*) to the time(tb) it receives '`Connection Established`'(or the connection to *testproxy* is completed).

pcon	Delay from the time(tc) proxyknife send CONNECT request for *checksite* to *testproxy* to the time(td) it receives '`Connection Established`'. With HTTP_GET method, it is impossilbe to get *pcon*, which is included in *pget* delay.
get	Delay from the time(te) proxyknife send HTTP GET request for *checksite* to *testproxy* to the time(tf) it receives the first byte data returned. Exclusive for HTTP_GET method.
pget	Delay from the time(te) proxyknife send GET request for *checksite* to testproxy to the time(tf) it receives the first byte data returned.
end	Delay from the time(tg or tf) proxyknife receive the first byte data to the time(th) it receives data including *key*.

If we define '`TP`' as '`testproxy`', '`TG`' as '`checksite`', then we got the '`approximate mathematics`' of the delays:

```
estab resp of TP
pcon  resp of TP + relay of TP + resp of TG
get   resp of TP + relay of TP + resp of TG + servicestart of TG
pget  resp of TP + 3/2*relay of TP + 2*resp of TG + servicestart of TG
end   0.5*resp of TP + 0.5*relay of TP + 0.5*resp of TG + serviceend of TG

total 4.5*resp of TP + 4*relay of TP + 4.5*resp of TG + serviceall of TG
2*end-get        2*servicedata + service(2*stop-start)

relay: time(data_out) - time(data_in).
resp: response.
serviceend = time intervals(send data) + time intervals(stop this task).
```

A guide to use the result:

- If you want to select a testproxy with the quickest response to you, just sort the result by *estab*.
- If you need a testproxy through which you can get the quickest response from the single *checksite* (see Section 2.2 [Startup Options], page 2), please sort by *pcon* if possible. If include the SERVICE response but not CONNECT response only, use *get* or *pget* instead. Certainly, you can guess the distribution of route from *testproxy* to *checksite* by comparing *pcon - estab, etc.*
- On the other hand, if you care for the bandwith of the whole route to target, you should sort by *2*end - get*. Tt is not accurate if the data returned by *checksite* is not large enough.

If you still feel puzzled, these tips are for you:

- You can sort testproxies by *estab* if you want to browse webpages via testproxy (either connect to myproxy firstly or not).

  This is the common choice if you need quick responses to all of the sites in average.
- You can sort result by *get* or *pget* if you wantto brower webpages of the *checksite* (see Section 2.2 [Startup Options], page 2) frequently via testproxy.

  It is a good choice if you care the first response from the *checksite* (see Section 2.2 [Startup Options], page 2) only.
- You can set *mytagconreplysize* to a big number, select a suitable *checksite*(a page with large data), and sort testproxies in the result by *end* if you want to download files via testproxy(through myproxy firstly or not) from *checksite*.

  Bandwith but not delay is important to bulk download.

Some of other *proxy hunters* prefer the total delay. From the *approximate mathematics* and the chart, I can't get the same conslusion. **I think the total delay is not as useful as** *estab,pcon,pget,get* **or even** *end*. If you have some different ideas, please send email to `bug-proxyknife@gnu.org`.

Tips: The less delay, the more speed. You should select the testproxies with the shortest delay, such as estab,pcon,get,pget or end.

12 Contact

- Reporting bugs: please send email to `bug-proxyknife@gnu.org`.

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