

---

# **badtouch Documentation**

**kpcyrd**

**Oct 17, 2018**



<b>1</b>	<b>Getting Started</b>	<b>3</b>
1.1	Installation	3
1.1.1	Archlinux	3
1.1.2	Mac OSX	3
1.1.3	Docker	3
1.1.4	Source	3
1.2	Usage	4
1.2.1	Options	4
1.2.2	Dictionary attack	4
1.2.3	Credential confirmation	4
1.2.4	Username enumeration	4
1.2.5	Oneshot	4
1.3	Scripting	4
1.3.1	base64_decode	5
1.3.2	base64_encode	5
1.3.3	clear_err	5
1.3.4	execve	6
1.3.5	hex	6
1.3.6	hmac_md5	6
1.3.7	hmac_sha1	6
1.3.8	hmac_sha2_256	6
1.3.9	hmac_sha2_512	6
1.3.10	hmac_sha3_256	6
1.3.11	hmac_sha3_512	7
1.3.12	html_select	7
1.3.13	html_select_list	7
1.3.14	http_basic_auth	7
1.3.15	http_mksession	7
1.3.16	http_request	7
1.3.17	http_send	8
1.3.18	json_decode	8
1.3.19	json_encode	8
1.3.20	last_err	9
1.3.21	ldap_bind	9
1.3.22	ldap_escape	9
1.3.23	ldap_search_bind	9

1.3.24	md5	9
1.3.25	mysql_connect	9
1.3.26	mysql_query	10
1.3.27	print	10
1.3.28	rand	10
1.3.29	randombytes	10
1.3.30	sha1	10
1.3.31	sha2_256	10
1.3.32	sha2_512	11
1.3.33	sha3_256	11
1.3.34	sha3_512	11
1.3.35	sleep	11
1.3.36	sock_connect	11
1.3.37	sock_send	11
1.3.38	sock_recv	11
1.3.39	sock_sendline	12
1.3.40	sock_recvline	12
1.3.41	sock_recvall	12
1.3.42	sock_recvline_contains	12
1.3.43	sock_recvline_regex	12
1.3.44	sock_recvn	12
1.3.45	sock_recvuntil	12
1.3.46	sock_sendafter	13
1.3.47	sock_newline	13
1.3.48	Wrapping python scripts	13
1.4	Configuration	13
1.4.1	Global user agent	14
1.4.2	RLIMIT_NOFILE	14

badtouch is a scriptable network authentication cracker. While the space for common service bruteforce is already **very well saturated**, you may still end up writing your own python scripts when testing credentials for web applications.

The scope of badtouch is specifically cracking custom services. This is done by writing scripts that are loaded into a lua runtime. Those scripts represent a single service and provide a `verify(user, password)` function that returns either true or false. Concurrency, progress indication and reporting is magically provided by the badtouch runtime.

```
$ badtouch dict users.txt /usr/share/dict/cracklib-small scripts/random.lua
[+] loaded 2 users
[+] loaded 54763 passwords
[+] loaded 1 scripts
[*] submitting 109526 jobs to threadpool with 16 workers
[+] [h] help, [p] pause, [r] resume, [+] increase threads, [-] decrease threads
[+] valid(random) => "foo":"astm"
[+] valid(random) => "foo":"axed"
[+] valid(random) => "foo":"growths"
[+] valid(random) => "foo":"olympia"
[+] valid(random) => "foo":"surfacing"
60825 / 109526 (=====) ) 55.53 % 60253.21/s 1s
```





### 1.1 Installation

If available, please prefer the package shipped by your linux distribution.

#### 1.1.1 Archlinux

```
$ pacman -S badtouch
```

#### 1.1.2 Mac OSX

```
$ brew install badtouch
```

#### 1.1.3 Docker

```
$ docker run --rm kpcyrd/badtouch --help
```

#### 1.1.4 Source

To build from source, make sure you have `rust` and `libssl-dev` installed.

```
$ git clone https://github.com/kpcyrd/badtouch
$ cd badtouch
$ cargo build
```

## 1.2 Usage

### 1.2.1 Options

```
-n, --workers <workers>   The number of concurrent workers to run.
-o, --output <output>     Write results to this file.
-v, --verbose              Enable verbose output.
-h, --help                 Prints help information.
-V, --version              Prints version information.
```

### 1.2.2 Dictionary attack

Try each password for each user with every script.

```
badtouch dict <users> <passwords> [scripts]...
```

### 1.2.3 Credential confirmation

Load a list of credentials with the format `user:password` and verify them with every script.

```
badtouch creds <credentials> [scripts]...
```

### 1.2.4 Username enumeration

Takes a list of username and verifies they exist on the system. This is still executing the `verify` function with two arguments, but the password is set to `nil`. You may write a script that can do both by checking the password for `nil` to detect in which mode the script is executed.

```
badtouch enum <users> [scripts]...
```

### 1.2.5 Oneshot

Test a single username-password combination using a specific script. This command is also useful when developing a new script. If the password argument is omitted, the script is executed in enumerate mode. If you want to use this command in scripts, set `-x` so the exitcode is set to 2 if the credentials are invalid.

```
badtouch oneshot [-x] <script> <user> [password]
```

## 1.3 Scripting

A simple script could look like this:

```
descr = "example.com"

function verify(user, password)
  session = http_mksession()
```

(continues on next page)



(continued from previous page)

```
-- get csrf token
req = http_request(session, 'GET', 'https://example.com/login', {})
resp = http_send(req)
if last_err() then return end

-- parse token from html
html = resp['text']
csrf = html_select(html, 'input[name="csrf"]')
token = csrf["attrs"]["value"]

-- send login
req = http_request(session, 'POST', 'https://example.com/login', {
  form={
    user=user,
    password=password,
    csrf=token
  }
})
resp = http_send(req)
if last_err() then return end

-- search response for successful login
html = resp['text']
return html:find('Login successful') ~= nil
end
```

Please see the reference and [examples](/scripts) for all available functions. Keep in mind that you can use *print(x)* and *badtouch oneshot* to debug your script.

### 1.3.1 base64\_decode

Decode a base64 string.

```
base64_decode("ww==")
```

### 1.3.2 base64\_encode

Encode a binary array with base64.

```
base64_encode("\x00\xff")
```

### 1.3.3 clear\_err

Clear all recorded errors to prevent a requeue.

```
if last_err() then
  clear_err()
  return false
else
  return true
end
```

### 1.3.4 execve

Execute an external program. Returns the exit code.

```
execve("myprog", {"arg1", "arg2", "--arg", "3"})
```

### 1.3.5 hex

Hex encode a list of bytes.

```
hex("\x6F\x68\x61\x69\x0A\x00")
```

### 1.3.6 hmac\_md5

Calculate an hmac with md5. Returns a binary array.

```
hmac_md5("secret", "my authenticated message")
```

### 1.3.7 hmac\_sha1

Calculate an hmac with sha1. Returns a binary array.

```
hmac_sha1("secret", "my authenticated message")
```

### 1.3.8 hmac\_sha2\_256

Calculate an hmac with sha2\_256. Returns a binary array.

```
hmac_sha2_256("secret", "my authenticated message")
```

### 1.3.9 hmac\_sha2\_512

Calculate an hmac with sha2\_512. Returns a binary array.

```
hmac_sha2_512("secret", "my authenticated message")
```

### 1.3.10 hmac\_sha3\_256

Calculate an hmac with sha3\_256. Returns a binary array.

```
hmac_sha3_256("secret", "my authenticated message")
```

### 1.3.11 hmac\_sha3\_512

Calculate an hmac with sha3\_512. Returns a binary array.

```
hmac_sha3_512("secret", "my authenticated message")
```

### 1.3.12 html\_select

Parses an html document and returns the first element that matches the css selector. The return value is a table with text being the inner text and attrs being a table of the elements attributes.

```
csrf = html_select(html, 'input[name="csrf"]')
token = csrf["attrs"]["value"]
```

### 1.3.13 html\_select\_list

Same as *html\_select* but returns all matches instead of the first one.

```
html_select_list(html, 'input[name="csrf"]')
```

### 1.3.14 http\_basic\_auth

Sends a GET request with basic auth. Returns true if no WWW-Authenticate header is set and the status code is not 401.

```
http_basic_auth("https://httpbin.org/basic-auth/foo/buzz", user, password)
```

### 1.3.15 http\_mksession

Create a session object. This is similar to `requests.Session` in python-requests and keeps track of cookies.

```
session = http_mksession()
```

### 1.3.16 http\_request

Prepares an http request. The first argument is the session reference and cookies from that session are copied into the request. After the request has been sent, the cookies from the response are copied back into the session.

The next arguments are the `method`, the `url` and additional options. Please note that you still need to specify an empty table `{}` even if no options are set. The following options are available:

- `query` - a map of query parameters that should be set on the url
- `headers` - a map of headers that should be set
- `basic_auth` - configure the basic auth header with `{"user", "password"}`
- `user_agent` - overwrite the default user agent with a string
- `json` - the request body that should be json encoded
- `form` - the request body that should be form encoded

- `body` - the raw request body as string

```
req = http_request(session, 'POST', 'https://httpbin.org/post', {
  json={
    user=user,
    password=password,
  }
})
resp = http_send(req)
if last_err() then return end
if resp["status"] ~= 200 then return "invalid status code" end
```

### 1.3.17 http\_send

Send the request that has been built with `http_request`. Returns a table with the following keys:

- `status` - the http status code
- `headers` - a table of headers
- `text` - the response body as string

```
req = http_request(session, 'POST', 'https://httpbin.org/post', {
  json={
    user=user,
    password=password,
  }
})
resp = http_send(req)
if last_err() then return end
if resp["status"] ~= 200 then return "invalid status code" end
```

### 1.3.18 json\_decode

Decode a lua value from a json string.

```
json_decode("{\"data\":{\"password\":\"fizz\",\"user\":\"bar\"},\"list\":[1,3,3,7]}")
```

### 1.3.19 json\_encode

Encode a lua value to a json string. Note that empty tables are encoded to an empty object `{}` instead of an empty list `[]`.

```
x = json_encode({
  hello="world",
  almost_one=0.9999,
  list={1,3,3,7},
  data={
    user=user,
    password=password,
    empty=nil
  }
})
```

### 1.3.20 last\_err

Returns `nil` if no error has been recorded, returns a string otherwise.

```
if last_err() then return end
```

### 1.3.21 ldap\_bind

Connect to an ldap server and try to authenticate with the given user.

```
ldap_bind("ldaps://ldap.example.com/",  
  "cn=\" .. ldap_escape(user) .. "\",ou=users,dc=example,dc=com", password)
```

### 1.3.22 ldap\_escape

Escape an attribute value in a relative distinguished name.

```
ldap_escape(user)
```

### 1.3.23 ldap\_search\_bind

Connect to an ldap server, log into a search user, search for the target user and then try to authenticate with the first DN that was returned by the search.

```
ldap_search_bind("ldaps://ldap.example.com/",  
  -- the user we use to find the correct DN  
  "cn=search_user,ou=users,dc=example,dc=com", "searchpw",  
  -- base DN we search in  
  "dc=example,dc=com",  
  -- the user we test  
  user, password)
```

### 1.3.24 md5

Hash a byte array with md5 and return the results as bytes.

```
hex(md5("\x00\xff"))
```

### 1.3.25 mysql\_connect

Connect to a mysql database and try to authenticate with the provided credentials. Returns a mysql connection on success.

```
sock = mysql_connect("127.0.0.1", 3306, user, password)
```

### 1.3.26 mysql\_query

Run a query on a mysql connection. The 3rd parameter is for prepared statements.

```
rows = mysql_query(sock, 'SELECT VERSION(), :foo as foo', {
    foo='magic'
})
```

### 1.3.27 print

Prints the value of a variable. Please note that this bypasses the regular writer and may interfere with the progress bar. Only use this for debugging.

```
print({
    data={
        user=user,
        password=password
    }
})
```

### 1.3.28 rand

Returns a random u32 with a minimum and maximum constraint. The return value can be greater or equal to the minimum boundary, and always lower than the maximum boundary. This function has not been reviewed for cryptographic security.

```
rand(0, 256)
```

### 1.3.29 randombytes

Generate the specified number of random bytes.

```
randombytes(16)
```

### 1.3.30 sha1

Hash a byte array with sha1 and return the results as bytes.

```
hex(sha1("\x00\xff"))
```

### 1.3.31 sha2\_256

Hash a byte array with sha2\_256 and return the results as bytes.

```
hex(sha2_256("\x00\xff"))
```

### 1.3.32 sha2\_512

Hash a byte array with sha2\_512 and return the results as bytes.

```
hex(sha2_512("\x00\xff"))
```

### 1.3.33 sha3\_256

Hash a byte array with sha3\_256 and return the results as bytes.

```
hex(sha3_256("\x00\xff"))
```

### 1.3.34 sha3\_512

Hash a byte array with sha3\_512 and return the results as bytes.

```
hex(sha3_512("\x00\xff"))
```

### 1.3.35 sleep

Pauses the thread for the specified number of seconds. This is mostly used to debug concurrency.

```
sleep(3)
```

### 1.3.36 sock\_connect

Create a tcp connection.

```
sock = sock_connect("127.0.0.1", 1337)
```

### 1.3.37 sock\_send

Send data to the socket.

```
sock_send(sock, "hello world")
```

### 1.3.38 sock\_recv

Receive up to 4096 bytes from the socket.

```
x = sock_recv(sock)
```

### 1.3.39 sock\_sendline

Send a string to the socket. A newline is automatically appended to the string.

```
sock_sendline(sock, line)
```

### 1.3.40 sock\_recvline

Receive a line from the socket. The line includes the newline.

```
x = sock_recvline(sock)
```

### 1.3.41 sock\_recvall

Receive all data from the socket until EOF.

```
x = sock_recvall(sock)
```

### 1.3.42 sock\_recvline\_contains

Receive lines from the server until a line contains the needle, then return this line.

```
x = sock_recvline_contains(sock, needle)
```

### 1.3.43 sock\_recvline\_regex

Receive lines from the server until a line matches the regex, then return this line.

```
x = sock_recvline_regex(sock, "^250 ")
```

### 1.3.44 sock\_recvn

Receive exactly n bytes from the socket.

```
x = sock_recvn(sock, 4)
```

### 1.3.45 sock\_recvuntil

Receive until the needle is found, then return all data including the needle.

```
x = sock_recvuntil(sock, needle)
```



### 1.3.46 sock\_sendafter

Receive until the needle is found, then write data to the socket.

```
sock_sendafter(sock, needle, data)
```

### 1.3.47 sock\_newline

Overwrite the default *n* newline.

```
sock_newline(sock, "\r\n")
```

### 1.3.48 Wrapping python scripts

The badtouch runtime is still very bare bones, so you might have to shell out to your regular python script occasionally. Your wrapper may look like this:

```
descr = "example.com"

function verify(user, password)
  ret = execve("./docs/test.py", {user, password})
  if last_err() then return end

  if ret == 2 then
    return "script signaled an exception"
  end

  return ret == 0
end
```

Your python script may look like this:

```
import sys

try:
  if sys.argv[1] == "foo" and sys.argv[2] == "bar":
    # correct credentials
    sys.exit(0)
  else:
    # incorrect credentials
    sys.exit(1)
except:
  # signal an exception
  # this requeues the attempt instead of discarding it
  sys.exit(2)
```

## 1.4 Configuration

You can place a config file at `~/.config/badtouch.toml` to set some defaults.

### **1.4.1 Global user agent**

```
[runtime]
user_agent = "w3m/0.5.3+git20180125"
```

### **1.4.2 RLIMIT\_NOFILE**

```
[runtime]
# requires CAP_SYS_RESOURCE
# sudo setcap 'CAP_SYS_RESOURCE=+ep' /usr/bin/badtouch
rlimit_nofile = 64000
```