

CrySyS Security Challenge 2021 - i use arch btw(misc) writeup

Challenge description:

Challenge 30 Solves

i use arch btw

210

easy

"If you don't fight with your OS for at least 2 hours a day for basic functionality, you're not a real man." ~Sun Tzu

author: chronos



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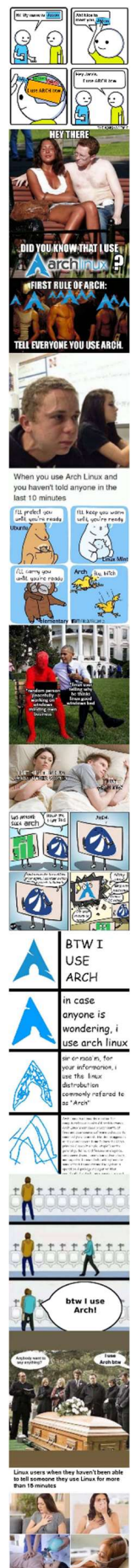
And the attached png image was a bunch of memes about Arch Linux.

At first, we tried to figure out the relation between Sun Tzu to that Linux distribution, but he lived and operated long before that – making us realize that is not the right way to approach it.

Looked for a couple of Steganography tools such as: TweakPNG, exiftool, pngcheck, binwalk, stegsolve and HexEditor.

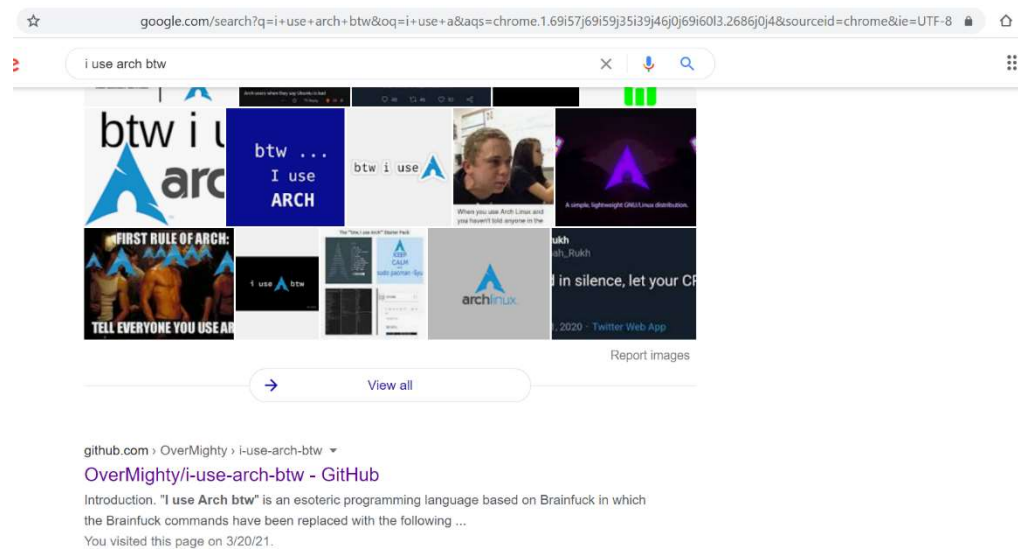
We did not find any helpful information using the above tools except for the last chunk in the png hex values that look like this, after the EOF:

00E8ABF0	20 6C 69 6E 75 78 20 6C	69 6E 75 78 20 6C 69 6E	75 78 20 6C 69 6E 75 78	20 6C 69 6E 75 78 20 6C	ux linux linux l
00E8AC00	75 78 20 6C 69 6E 75 78	20 6C 69 6E 75 78 20 6C	61 79 20 75 73 65 20 62	inix i way use b	
00E8AC10	69 6E 75 78 20 69 20 77	20 6C 69 6E 75 78 20 62	72 63 68 20 61 72 63 68	tw linux linux b	
00E8AC20	74 77 20 6C 69 6E 75 78	72 63 68 20 61 72 63 68	63 68 20 61 72 63 68 20	tw btw arch arch	
00E8AC30	74 77 20 62 74 77 20 61	63 68 20 61 72 63 68 20	68 20 61 72 63 68 20 74	btw i arch arch	
00E8AC40	20 62 74 77 20 69 20 61	68 20 61 72 63 68 20 74	20 75 73 65 20 61 72 63	arch arch arch	
00E8AC50	20 61 72 63 68 20 61 72	68 20 61 72 63 68 20 61	72 63 68 20 61 72 63 68	arch arch arch t	
00E8AC60	61 72 63 68 20 61 72 63	20 75 73 65 20 61 72 63	68 20 61 72 63 68 20 61	he linux use arc	
00E8AC70	68 65 20 6C 69 6E 75 78	72 63 68 20 61 72 63 68	63 68 20 61 72 63 68 20	h arch arch arch	
00E8AC80	68 20 61 72 63 68 20 61	63 68 20 61 72 63 68 20	69 20 61 72 63 68 20 61	arch arch arch	
00E8AC90	20 61 72 63 68 20 61 72	68 20 69 20 77 61 79 20	20 61 72 63 68 20 61 72	arch arch i way	
00E8ACA0	61 72 63 68 20 61 72 63	69 20 61 72 63 68 20 61	61 72 63 68 20 61 72 63	use btw i arch a	
00E8ACB0	75 73 65 20 62 74 77 20	20 61 72 63 68 20 61 72	63 68 20 61 72 63 68 20	rch arch arch ar	
00E8ACC0	72 63 68 20 61 72 63 68	61 72 63 68 20 61 72 63	6E 75 78 20 75 73 65 20	ch arch arch arc	
00E8ACD0	63 68 20 61 72 63 68 20	6E 75 78 20 75 73 65 20	6C 69 6E 75 78 20 6C 69	h the linux use	
00E8ACE0	68 20 74 68 65 20 6C 69	6E 75 78 20 6C 69 6E 75	78 20 6C 69 6E 75 78 20	linux linux linu	
00E8ACF0	6C 69 6E 75 78 20 6C 69	6E 75 78 20 6C 69 6E 75	78 20 6C 69 6E 75 78 20	x linux linux li	
00E8AD00	78 20 6C 69 6E 75 78 20	6C 69 6E 75 78 20 6C 69	6E 75 78 20 6C 69 6E 75	nux linux linux	
00E8AD10	6E 75 78 20 6C 69 6E 75	6E 75 78 20 6C 69 6E 75	6C 69 6E 75 78 20 6C 69	linux linux linu	
00E8AD20	6C 69 6E 75 78 20 6C 69	6E 75 78 20 6C 69 6E 75	79 20 75 73 65 20 6C 69	x linux linux li	
00E8AD30	78 20 6C 69 6E 75 78 20	6C 69 6E 75 78 20 6C 69	78 20 6C 69 6E 75 78 20	nux i way use li	
00E8AD40	6E 75 78 20 69 20 77 61	79 20 75 73 65 20 6C 69	0A +	nux linux linux	
00E8AD50	6E 75 78 20 6C 69 6E 75	0A +		btw use .	
00E8AD60	62 74 77 20 75 73 65 20				



Obviously, this is peculiar but the solution is not given from the repeated ASCII values.

Tried a Google search for the phrase that is shown everywhere in the challenge ("i use arch btw") and got into the first result.



It was a GitHub repository that described our situation exactly.

I use Arch btw

"I use Arch btw" but it's a Turing-complete programming language.

[Example programs](#) | [Language specification](#) | [Virtual machine specification](#)

Introduction

"I use Arch btw" is an esoteric programming language based on [Brainfuck](#) in which the Brainfuck commands have been replaced with the following keywords:

```
i, use, arch, linux, btw, by, the, way.
```

This repository contains the source code for an "I use Arch btw" [C/C++ library](#) and [command-line interpreter](#), both written in C99.

Followed the installation instructions, extracted that chunk of data and as said at the README we converted the file to archbtw extension.

Finally, running the command and we got it

```
eden@LAPTOP-B8KGEEJJ:~/i-use-arch-btw$ i-use-arch-btw i_use_arch_btw.png.archbtw
Can you guess what operating system I use? B|
Anyway, congrats, here is your flag :)
cd21{1_u53_m4c05_wh3n_n0b0dy_5335}
```