
The secret passphrase is "Scientia Potentia Est!"

*Decoded at 11:32 AM
"Knowledge Is Power"*

Steps

1. Our team started with [the rubric](#) and the following text from Dr. Timo.



We had [previously modified a copy of program 05. TimeLock](#), to get the computer's local time from a time server. We inserted the provided IP address into the program, modified the debug epoch time, and ran the program but repeatedly got the wrong password. After changing our program's time format and debugging for 5-10 minutes, we discovered that Dr. Timo's epoch time was in CST! We had previously assumed it was UTC. The program was modified to read the CST from Dr. Timo's time server instead of UTC and we were able to get into the FTP server.

2. Using [gftp](#) and the login deciphered in the previous step, we logged into the FTP server, selected [all the files we saw](#), and transferred them to our local machine. The server's contents appear to be a linux user's home directory, with only one non-hidden folder: FILES. This folder contained two files: [clph3r](#) and [k3y](#). Since these had the same length, we used our [XOR program](#) to find [the next file, which we called out.bmp](#). Note: the .bmp was not added until after the challenge. [xdg-open](#) allowed us to read the file without knowing the extension.

3. We had previously written two script calls based on the rubric:

```
#1: py steg.py -r -o2048 -B -i 8? -w wrapper_file  
#2: py steg.py -r -o2049 -b -i 4or2? -w wrapper_file
```

These command predictions were correct: with wrapper file `out.bmp` and our [steg.py](#) program, running the first command returned [out-1.jpeg](#) and running the second (with interval 2) returned [out-2.txt](#). Again, we did not know the real file extensions until after the challenge.

4. After looking around for a moment, we discovered that some of the text was off in `out-2.txt`. We tried a few steganography retrievals, and one eventually worked:

```
$ py steg.py -r -B -i64 -w out-2.txt  
=> he secret passphrase is "Scientia Potentia Est!"
```

We do not know what happened to the T at the beginning of the password nor what the purpose of `out-1.jpeg` was, but the challenge was solved anyway!

Contributions

Brendan Guillory

Helped write the modified timelock script and helped decipher the XOR'd files retrieved from the FTP server. Crashed Discord unintentionally by pasting in the constitution which resulted in the winner discrepancy at the end. Do not believe Christian's lies - I am the reason we accidentally posted in #general!

Cameron Robertson

Helped decipher the XOR files retrieved from the ftp server.

Christian Evans

Helped Brendan through the thought process of troubleshooting for connecting to the FTP server, finding the hidden messages in the encoding and images, and submitted the original final paraphrase, but deleted soon after as I typed in stupidly in #general Discord chat. There is no proof.

As a side note, I believe this was the most teamwork we've had in a challenge yet. Communication improvements all-around.

Cody Woessner

Determined the offsets alongside others in the group. Helped with code review before the challenge. Contributed to problem solving during the challenge.

Drew Young

I assisted with troubleshooting issues with connecting to the FTP server as well as helping with decoding for the passphrase. I also negotiated with Dr.Timo and Team Osiris about an alleged security breach that my teammate did not make. There is no proof.

Frankie Lavall

Christian typing for him. He was absent. Told us via Discord that he had a family emergency.

Tristen Barton

I helped debug the timelock code to get the password for the FTP server, and I helped sort through the files that were downloaded from the server. I also helped with the steg interval and offset to get the final phrase.