

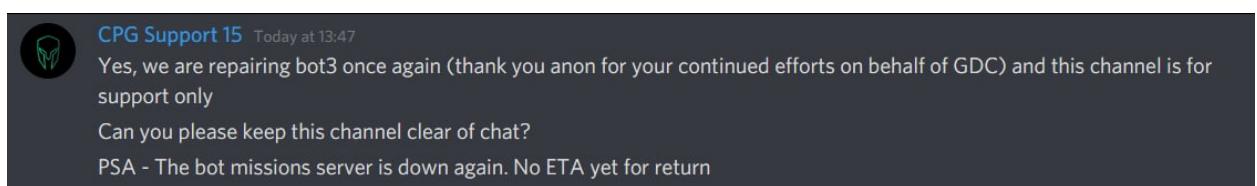
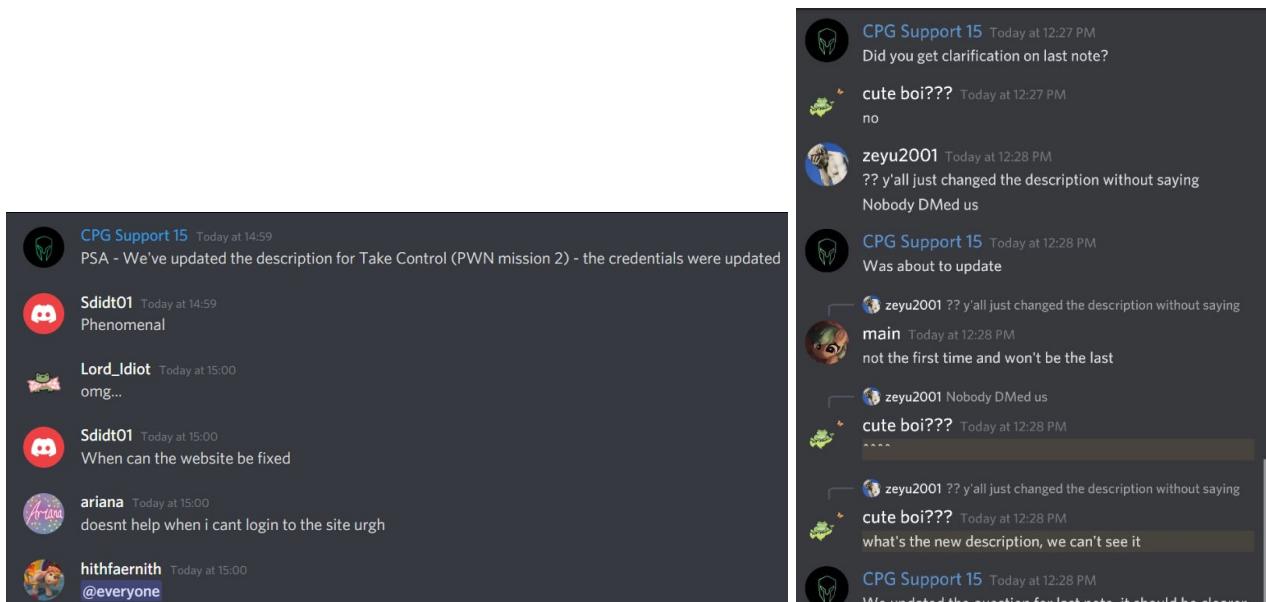
Overall, those in charge of handling the event (mostly BSW it seems) were extremely unprepared to handle an event at this scale and to fix technical issues whenever they appear. This document details most issues faced during the event so hopefully these can be mitigated in future events. If there are any further enquiries regarding how the CTF went or suggestions for future CDDCs, we would be happy to help out!

## Discord issues

### Information/Announcements

- Announcements were sent in the text channels for the different categories instead of the announcement channel, frequently without pinging everyone, leading to important updates getting lost. Information that are not announced when they should be include
  - Challenges going down/up
  - Challenges getting fixed/no longer working
  - Additional information about a challenge that was not mentioned

This can easily be addressed by having proper announcement channels for each category



- No roles differentiating senior/junior category, so everyone (even from the other category) ended up getting pinged for information regarding the other category

# Challenge support

- No ticket system
  - Everyone asks their questions in the same channel, hoping an admin will notice and if they get lucky, get a reply or get a direct message
  - The whole channel becomes a mess, possible key information getting leaked as well such as important files (i.e. systeminfo in linux4 of senior)
  - Specific issues are failed to be addressed
  - Due to the flood of queries, the admins set a slow mode of 10s everywhere and 30s for the support chat

The screenshot shows a messaging interface and a terminal window. In the messaging interface, Akari asks if something is fixed, and CPG Support 100 replies that they didn't see a message. Akari then says 'ahh no worries'. CPG Support 100 replies that they will update once noticed. Akari then asks if something is fixed, and CPG Support 100 replies that they still can't access it. In the terminal window, a series of NFS mounting attempts are shown, each failing due to permission denied or operation not permitted.

```
mount -t nfs 178.128.118.134:/var/nfs/backup /tmp/cddc
[...]
# mount -t nfs -vvvv 178.128.118.134:/var/nfs/backup /tmp/cddc
mount.nfs: timeout set for Thu Jun 24 00:16:57 2021
mount.nfs: Operation not permitted
mount.nfs: mount(2): Operation not permitted
mount.nfs: trying text-based options 'addr=178.128.118.134'
mount.nfs: prog 100003, trying vers=3, prot=6
mount.nfs: trying vers=3, prot=5
mount.nfs: trying vers=3, prot=4
mount.nfs: trying vers=3, prot=17
mount.nfs: trying 178.128.118.134 prog 100005 vers 3 prot UDP port 37021
mount.nfs: mount(2): Permission denied
mount.nfs: access denied by server while mounting 178.128.118.134:/var/nfs/backup
[...]
# mount -t nfs -vvvv 178.128.118.134:/var/nfs/backup /tmp/cddc
mount.nfs: access denied by server while mounting 178.128.118.134:/var/nfs/backup
[...]
# ls
[...]
[...]
# mount -t nfs -vvvv 178.128.118.134:/var/nfs/backup /tmp/cddc
mount.nfs: access denied by server while mounting 178.128.118.134:/var/nfs/backup
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[...]
# mount -t nfs -vvvv 178.128.118.134:/var/nfs/backup /tmp/cddc
mount.nfs: access denied by server while mounting 178.128.118.134:/var/nfs/backup
[...]
```

The player's ip was blocked from one of the reconnaissance challenges from "Going Active" - mounting, making it unsolvable. However, support is not there at all.

This can easily be settled by having a proper ticketing system (which most ctfs have) that allows for players to directly contact the sysadmins/challenge authors for issues.

- Lack of technical knowledge
  - Admins do not know what is happening to every challenge in detail which is to be expected, however they attempt to help and provides incorrect information way more often than they should

The screenshot shows a messaging interface and a terminal window. urmomgabé asks if the index.php file is empty, and wellinsmark replies that it was last modified around 2 hours ago. urmomgabé then asks to finish with 'Sir' and come back later. wellinsmark replies that it is supposed to be empty. urmomgabé then says 'Oh ok, thank you'. wellinsmark replies with 'Happy hunting!' and a smiley face icon.

```
urmomgabé Today at 4:52 AM
hi, can I check if the index.php- for the web challenge Integrity is supposed to be empty? my request shows that it was last modified around 2 hours ago

wellinsmark Today at 4:54 AM
Let me finish with 'Sir' and come back here please

urmomgabé Today at 4:55 AM
Sure, thank you

wellinsmark Today at 4:58 AM
Yes supposed to be empty

urmomgabé Today at 4:58 AM
Oh ok, thank you

wellinsmark Today at 4:58 AM
Happy hunting!
```

The key to this challenge was to view the index.php~ file to obtain a JWT key that can't be brute-forced

 @CPG Support 15 Ok, Linux server is back Scene 1 Take 42. bots missions are on  
**ombaba** Today at 3:39 PM  
It's prompting for a password after the passphrase

 @ombaba It's prompting for a password after the passphrase  
**CPG Support 15** Today at 3:20 PM  
Correct. Please continue  
Please continue

 **ariana** Today at 3:23 PM  
wdym?????????????

 **CPG Support 15** Today at 3:24 PM  
Reconnect to the server and continue (Sorry I wasn't clear)

 **ariana** Today at 3:24 PM  
<https://media.discordapp.net/attachments/625244036466343942/857883935269584906/unknown.png>  
still doesn't work

 **CPG Support 15** Today at 3:25 PM  
Mission 1 is not working?

 **Kweer** Today at 3:25 PM  
password is wrong

 **ariana** Today at 3:26 PM  
ok could you ask the chat admins how do we ssh in

Is the key the same  
Can we get username:passwords or an updated key if not

 **ben** Today at 3:26 PM  
Yea its suppose to prompt Enter passphrase for key "bot1.key":  
  
not (bot1@18.136.213.192.83) Password: (redacted)

 **CPG Support 15** Today at 3:27 PM  
Nice

**Extremely confused text**

 **Coldspot** Today at 7:17 PM  
Hello!

 **wellinsmark** Today at 7:17 PM  
Still here

 **Coldspot** Today at 7:17 PM  
i cant seem to connect to pwn 2

```
[jasonballi@~/Desktop/cddc21$ ssh bot@18.136.182.104 60220
The authenticity of host '18.136.182.104 (18.136.182.104)' can't be established.
ECDSA key fingerprint is SHA256:3C9D9F5A9E9B9A9A9A9A9A9A9A9A9A9A.
Are you sure you want to continue connecting? (yes/no/[Fingerprint])? yes
Warning: Permanently added '18.136.182.104' (ECDSA) to the list of known hosts.
Password: 
Password: 
jasonballi@~/Desktop/cddc21$ sshbot@18.136.182.104: password:
Permission denied, please try again.
bot@18.136.182.104's password:
jasonballi@~/Desktop/cddc21$ ssh 18.136.182.104 port 22:2 Too many authentication failures
Disconnected from 18.136.182.104 port 22
[jasonballi@~/Desktop/cddc21$ h0tcp35wbot@201]
```

 **wellinsmark** Today at 7:18 PM  
Yes, that's the mission

 **Coldspot** Today at 7:18 PM  
?

```
Target: 18.136.182.104 port 60220
Username: bot
Password: GDcpa$$w0rd2021
```

**Being clueless about objectives**

Pwn3 - Where the admins didnt know if aslr was enabled and if libc was the same

 CPG Support 100 Yesterday at 3:14 PM  
what ldd shows you?

 ariana Yesterday at 3:26 PM  
it tells me that aslr is enabled LOL

 @ariana it tells me that aslr is enabled LOL  
 CPG Support 100 Yesterday at 3:57 PM  
My mistake, its intended...

 @ariana the libc provided is the same right  
 CPG Support 100 Today at 3:13 PM  
I cant provide you technical assistant i am sorry.

**ariana** Yesterday at 8:09 PM  
So the challenge is a ret2libc, but the libc that the challenge provided is wrong:

```
bot@ee172200cb98:~$ ldd gcd_library
    linux-gate.so.1 (0xf7f9c000)
    libc.so.6 => /lib32/libc.so.6 (0xf7da8000)
    /lib/ld-linux.so.2 (0xf7f9e000)
bot@ee172200cb98:~$ 
bot@ee172200cb98:~$ md5sum /lib32/libc.so.6
3b44483cef533b0e6ce0ca7d7da84f26  /lib32/libc.so.6
bot@ee172200cb98:~$ 
bot@ee172200cb98:~$ logout
Connection to 18.136.182.104 closed.
ariana@ariana ~/D/S/2/C/GDC: md5sum libc.so.6
14a55fce54c48efc883541ae63ff7d  libc.so.6
```

is it possible if you could help provide with the correct libc?  
oh actually nvm i found the correct libc on github

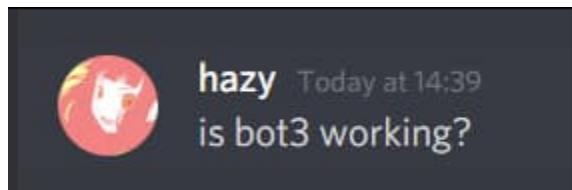
but perhaps update the challenge to remove the libc?

CPG Support 13 Yesterday at 8:12 PM

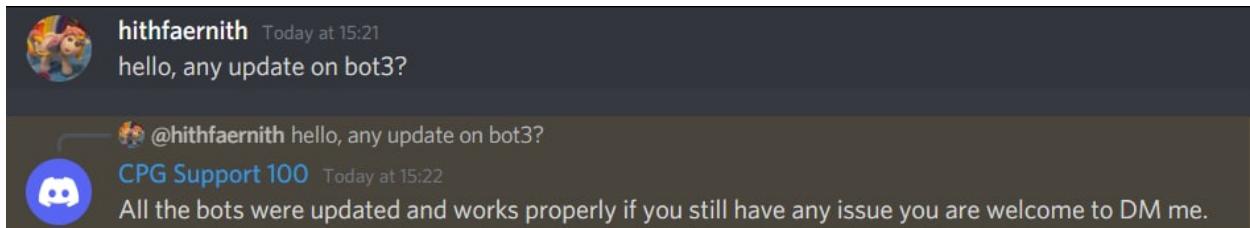
The libc file is provided as a clue. It is not the exact one on purpose.

Again a ticketing system would have helped here

- Updates took extremely long or may not even come
  - When the competition was delayed on day 1, “regular updates” were promised. However, the next update after the mass uproar at ~10.30am was 1.30pm, and the following update was at 5pm. As many of us did not know what to expect but did not want to miss out on potential announcements, we spent the entire day waiting at our computers, thus leading to a lot of banter and spam) and subsequently wasted the first day.
  - In the pwn3 example, ariana asked if the aslr was meant to be brute forced or base address leaked but no replies were given, even after she asked multiple times.
  - When one of the challenges went down (bot 3 of Linux Rules The World) for the nth time, it took a few hours to get an update and we were not notified that people were working on this issue.



2.39pm, @hazy asked in the support channel. There was no follow up whatsoever.

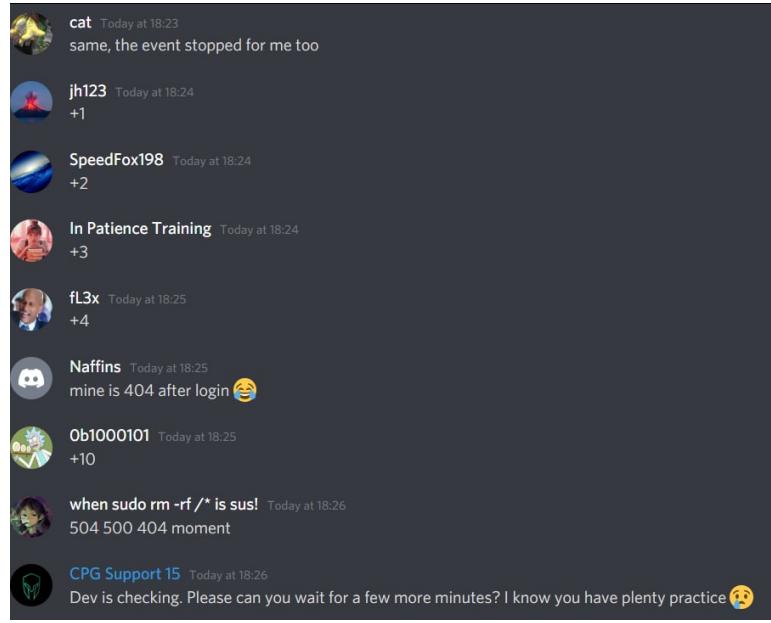


This took 1 hour to resolve, and was not the only time that this specific challenge went offline.

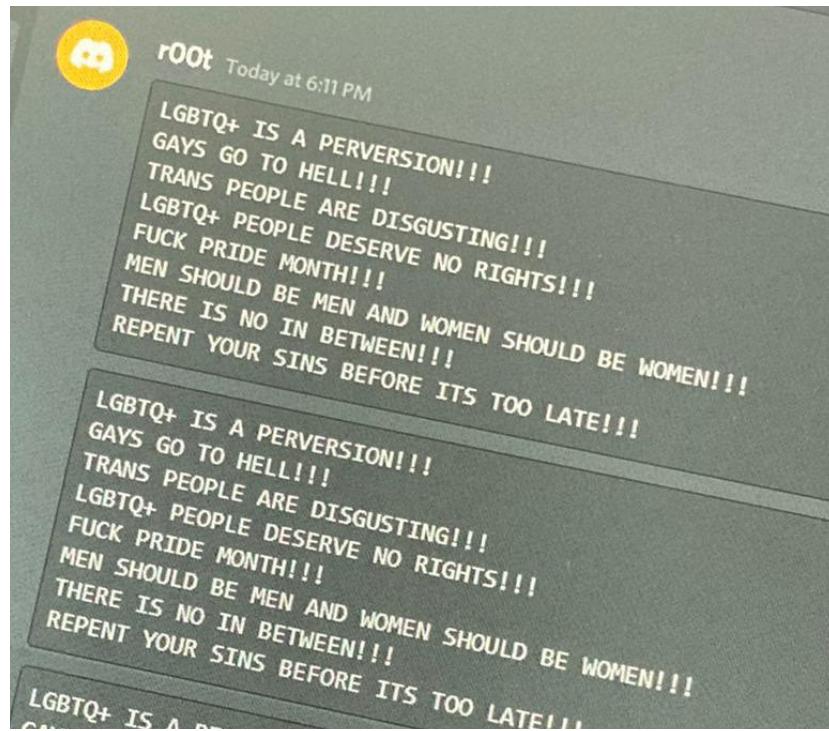
-

## Misc

- Passive aggressive behaviour from the admins when people give feedback about the website crashing or challenges being down which occurred many times.



- Poor server admission, griefers were able to easily create alt accounts to leak flags and send offensive/obscene (e.g. ascii porn and a porn discord server) materials into the chat. The admins could have been more direct in removing content that crosses most reasonable notions of online etiquette. However, they were active in deleting messages that they did not like.



- Censorship. Deleted all messages (and sometimes banned users) containing words like 96,888 (tender amount) or BSW (company name) as well as all Discord channels after it was over. Video of a member getting banned:  
<https://vimeo.com/manage/videos/567516833>

- For the junior category, tiebreakers had to be requested and no response was received for several hours after this request. The reactions were from fellow participants.

Look DSTA, BSW and other stakeholders,

The last challenge **was a difference of literal seconds** and the top 3 teams and others included would like a tiebreaker. Its **not hard to put in challenges from the senior category** and its also **not hard to have a proper tiebreaker consisting of multiple challenges which will ensure the fairness of this competition**

[@Corliss \(DSTA\)](#) [@Xinni \(DSTA\)](#) [@CPG Support 1](#) [@CPG Support 10](#) [@CPG Support 100](#) [@CPG Support 13](#) [@CPG Support 15](#) [@CPG Support 16](#) [@CPG Support 2](#) [@CPG Support 3](#) [@CPG Support 4](#) [@CPG Support 7](#)

We know theres an admin channel and we hope you guys will take the time to consider our request to setup tiebreaker challenges **that are not based on internet connectivity or internet speed**



## Platform

### Responsiveness

- The platform was extremely slow and unresponsive, often requiring load times of up to a minute for the senior category. Furthermore the platform would log users out and throw 500/502/504 errors and one can only pray that it fixes itself. This is due to the servers not being set up to receive the load. Due to this, the senior category was delayed for 24 hours.

The handling of the delay was executed quite poorly, everyone in the senior category was asking for an ETA but none was given, leading everyone to waste the whole day in discord. An ETA was given at 6pm which said the platform would be up at 7pm, then it was delayed to 8pm and finally to 10am. Some of us, seeing the junior challenges, have tried to ask for the competition to be reduced to 24 hours, however not much information was given about this and the challenge was only reduced to 36 hours, which would have interfered with those who have planned for other events after Friday 10am.

- Removed SSL for the CTF platform for a period of time for some apparent reason, perhaps in hopes that it would reduce load on the senior team which does not make sense.
- Flag submission would take ages to load for some reason as well.

### Platform was possibly unlicensed

- Cympire - partner company of BSW, hosted CTF:
  - Using of unlicensed open source CTF platform called Root The Box
    - <https://github.com/moloch--/RootTheBox/blob/master/LICENSE>:
    - "You must give any other recipients of the Work or Derivative Works a copy of this License" - no license to be found on the platform

- “You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works;” - they did not credit RTB anywhere, only credit line is for them:

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- Even the example UI [screenshots](#) in RTB GitHub look nearly identical to “Cympire” platform (basically just RTB with a slightly custom theme)
- Proof that they used RTB: (corresponding Root The Box page: <https://github.com/moloch-/RootTheBox/blob/96f0d11d3bb2dca7020b78cc6294d163f62fc5d8/templates/public/404.html>)



- Questionable Privacy Policy

## Bugs

- Flag submission is sometimes bugged as well, leading to teams being unable to solve challenges and having to wait for a long time in hopes that a support personnel comes and helps.
- Accounts were randomly logged into, users were able to see personal information (such as email address) of other users, as well as team invite codes.



- One could locate/forsee challenges before they are released which should not happen.
- Mysterious sorting algorithm



## Misc

- Ridiculous scoreboard graph that is impossible to look at. Setting data points to 1000 crashes the site locally. Pie chart was laughably useless. Literally served no purpose at all.

- Live leaderboard sorted in some mysterious order. Sorted apparently by name rather than time of solve for teams tied at the same points.
- Annoying BG music that is loud and cannot be turned off for some apparent reason. It's purely a waste of bandwidth and the server was slow enough already.

# CTF

## Challenges (overall)

- Generally low effort and some challenges are completely copied. For instance, Senior Web2 Regex was a complete copy of root-me's php eval (<https://joshuanatan.medium.com/root-me-web-server-php-eval-f77584cae128>) other than a guess the backup file factor which was identical to Web1's integrity challenge.
- Challenges were not isolated, leading to teams being able to interfere with other teams. More detailed given in the later sections.
- Many challenges were either missing flags or important files and these would take hours to fix.

There are no or very hidden updates to this and sha hashes would not match as challenge files are updated.

before	after																														
<pre>D:\Data\Cyber\Forensics\olevba "D:\Desktop\CDDC\GDC Operational Planning.doc" olevba 0.60 on Python 3.9.5 - http://decalage.info/python/oletools ===== FILE: D:\Desktop\CDDC\GDC Operational Planning.doc Type: OLE No VBA or XLM macros found.</pre>	<table border="1"> <thead> <tr> <th>Type</th> <th>Keyword</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Suspicious</td> <td>CreateObject</td> <td>May create an OLE object</td> </tr> <tr> <td>Suspicious</td> <td>Adodb.Stream</td> <td>May create a text file</td> </tr> <tr> <td>Suspicious</td> <td>savetorile</td> <td>May create a text file</td> </tr> <tr> <td>Suspicious</td> <td>Shell</td> <td>May run an executable file or a system command</td> </tr> <tr> <td>Suspicious</td> <td>Open</td> <td>May open a file</td> </tr> <tr> <td>Suspicious</td> <td>write</td> <td>May write to a file (if combined with Open)</td> </tr> <tr> <td>Suspicious</td> <td>chr</td> <td>May attempt to obfuscate specific strings (use option --deobf to deobfuscate)</td> </tr> <tr> <td>Suspicious</td> <td>http://&lt;url&gt;.pub</td> <td>May download files from the Internet</td> </tr> <tr> <td>IOC</td> <td>flag.exe</td> <td>Executable file name</td> </tr> </tbody> </table>	Type	Keyword	Description	Suspicious	CreateObject	May create an OLE object	Suspicious	Adodb.Stream	May create a text file	Suspicious	savetorile	May create a text file	Suspicious	Shell	May run an executable file or a system command	Suspicious	Open	May open a file	Suspicious	write	May write to a file (if combined with Open)	Suspicious	chr	May attempt to obfuscate specific strings (use option --deobf to deobfuscate)	Suspicious	http://<url>.pub	May download files from the Internet	IOC	flag.exe	Executable file name
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- Naming scheme for files is quite bad for a ctf, with everything named file.zip. Furthermore in forensics, there was a file named pcap.cap and another named cap.pcap which makes little sense.
- Challenges where unintended solutions existed, those solutions are removed which caused teams that failed to catch it in time to lose out on the free points (in particular, see web2 of senior)

## Challenges (linux)

For junior and senior team, the linux box was shared with all participants and is badly misconfigured

- It was down for most of the competition and whenever the admins say it is up, it is only a matter of time before it fails. It took an extremely long time for the linux box to come back

up just to fail again and again. This resulted in only the top 6 teams to solve all challenges even though they were relatively straightforward

- passwd was a binary that everyone could run, locking everyone out of challenges (it was tested by changing the password but I couldn't find a screenshot of that)

```
bot2@cybot02:/home/bot1$ passwd
Changing password for bot2.
Current password:
New password:
Retype new password:
Password unchanged
```

- First bot account that we logged in to was not properly secured, and everyone had write access to the entire home directory (which means they can override the flag, and revoke access to the server by means of tampering with authorized\_keys)

```
bot5@cybot01:~$ cat .profile
oi diam la bitch
```

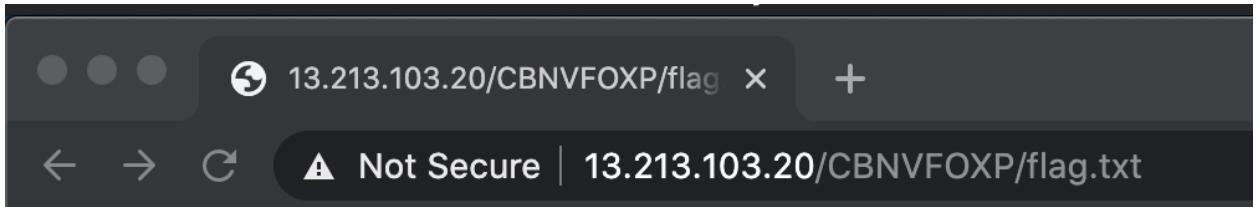
```
[bot1@cybot01:~$ cat flag.txt
sudo su bot2
```

- wall was enabled allowing anyone to send announcements, combined with the previous issue, one sees the following when you ssh in:

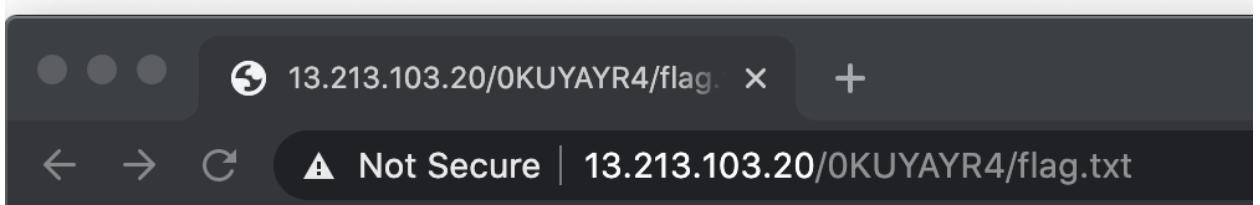
- Exposed everyone's IP address via who
  -

## Challenges (web)

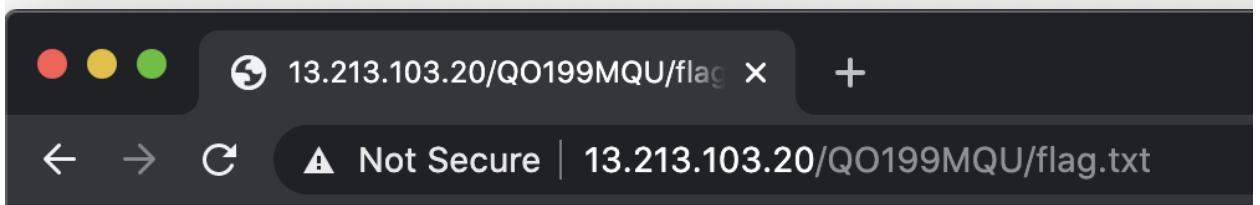
- The environment for web2 in senior was not isolated, allowing one to get flags for 2 challenges at once. Do note that web2 was the final category opened so the first to complete all challenges wins.
  - /flag.txt gave the flag immediately. Reiterating that one can win senior by getting all 3 flags, it would have been easy to instantly win (if any of the teams dirbusted with a wordlist containing flag.txt it would have been instant, since the challenges required dibusting anyways)



CDDC21{s4F3\_uPl04dZ}



CDDC21{s3r1Alize\_mY\_PHPP}



CDDC21{Am4z1ng\_!Njection!}

Immortalized with webarchive:

- <https://web.archive.org/web/20210625031907/http://13.213.103.20/OKUYAYR4/flag.txt>
- <https://web.archive.org/web/20210625032401/http://13.213.103.20/CBNVFOXP/flag.txt>
- <https://web.archive.org/web/20210625032424/http://13.213.103.20/QO199MQU/flag.txt>

## Challenges (pwn)

- For senior pwn1, one can easily overwrite everything, preventing others from solving and even preventing anyone from logging in

```
cat flag
CDDC21{01?}
echo "CDDC21{fake flag time}" > flag
cat flag
CDDC21{fake flag time}
```

```
ariana@ariana ~> nc 18.136.182.104 60210
./gdc_exec sh
cat flag
CDDC21{fake flag time}
```

## Challenges (crypto)

- Little to no effort put in to create Crypto challenges, the entire section could be solved within 10 minutes using purely online tools. It is no longer a test of cryptography skills but rather one's ability to use Cyberchef (an online tool)
  - Challenge 1 (Junior) was just base64 6 times and rot13 lol
  - Challenge 1 (Senior) was base64/base32 and rot47. Like srsly? Why the mix of the two of a single bases in a “messages capture”? It becomes more of a guessing game than an actual crypto CHALLENGE
  - Challenge 2 was a transposition cipher
  - Challenge 3 (Junior) was xor
  - Challenge 3 (Senior) “Never” was just a scripting challenge and did not test much of crypto. Write a script to loop the 6 digit key and grep for CDDC21{.\*}

## Misc

- Scoreboard still locked after the end of CTF, not even the scoreboard for juniors is known even after the prize presentation.
- Platform is completely closed now



- Discord chat **immediately** closed after ctf end (Anyone create new discord), no chance for feedback or discussion. A member managed to get chat logs for the support chat!

## Logs

Here are some partial logs that we have managed to find:

### Senior chat

<https://drive.google.com/file/d/1dgJUWuHIU1-Qt4pz5jOmyuTOmmNjUtv4/view?usp=sharing>

### Support chat

<https://drive.google.com/file/d/15Tkra1IBo74FmVP-gWyMXqQVfqWbb1XO/view?usp=sharing>