finals-2022-spacebitsrus

@vito created this private channel on October 3rd. This is the very beginning of the **finals-2022-spacebitsrus** channel.

Add description Add people Send emails to channel

Monday, October 3rd



vito 3:45 PM

joined finals-2022-spacebitsrus along with 10 others.

Friday, October 7th



vito 1:14 PM

Welcome to Hack-A-Sat 3 Finals chat!

- 1. These guidelines do not supersede the official rules; they're here to make chatting in Slack useful and productive for all of us.
- 2. The goals of these channels are to address hardware, infrastructure, and other gameplay issues.
- 3. You should have access to both finals-2022 and #finals-2022-TEAMNAME . Please let Mission Control know if you don't! Do that now!
- 4.All finals-2022 and #finals-2022-TEAMNAME conversations will be made public after the game ends. Don't chat anything you wish to keep private. Don't chat personally identifiable information.
- 5. Please be thoughtful with which team members engage in communication with organizers. While we don't want your team to miss important details due to someone taking a break or being busy, we also don't want to spend a bunch of time getting confused or de-conflicting what more people want.
- 6. That said, it's totally okay to have your whole team in both the finals-2022 and #finals-2022-TEAMNAME rooms reading.
- 7. Sending private or direct messages to a game operator will make it more difficult for operators and other members of your team to know what's going on. Please don't.
- 8.Both finals-2022 and #finals-2022-TEAMNAME can be used for official communication through the end of Hack-A-Sat finals. shout@hackasat.com is also still available for official communication.
- 9. Please review the contest rules and keep an eye out for updates at https://www.hackasat.com/



Friday, October 14th



wyattearp 3:45 PM

@Cydonia - following up on your request for the timing integer: 4277009102





20 days agoView thread

Sunday, October 16th



wyattearp 9:46 AM

We noticed that when requesting the "CURRENT_RADIO_CONFIGS" from the RADIO target, an error message is logged stating a mismatch between the expected and received telemetry. The telemetry definition appears wrong (such as the constellation field being 16 bits instead of 64, the FEC bit offset being wrong, etc). Is this a bug or intentional?



spaceymcspaceface 11:03 AM

Thanks for letting us know. Taking a look.



spaceymcspaceface 11:38 AM

Definitely a bug, not intentional. Working a fix for the telemetry definition.



Monday, October 17th



Batman 9:11 AM

was added to finals-2022-spacebitsrus by vito, along with 3 others.



wyattearp 6:34 PM

Hi - we're trying to determine if we broke one of the services on the DT or on Cosmos based on a command we sent that never ended. The behavior we're seeing is that the CFE_ES is unresponsive to NOOP commands while other components are functional. We've attempted both PROCESSOR_RESET and a POWERON_RESET as last efforts and still are seeing the same behavior. Can you let us know if we've created a virtual space brick?



safemode 6:35 PM yeah give me a couple



wyattearp 6:35 PM

thanks!



safemode 6:42 PM

looks like your flight software is dead

what command did you send?



wyattearp 6:44 PM

We think someone left a -c 3 off of a ping OR that we got a little ambitious with the scripting and you can't send a && when executing shell output commands



safemode 6:44 PM

ok so you were executing shell commands via CFE ES?



wyattearp 6:46 PM

a = 'whoami'

Via the command scripter (old version):

```
#a = 'ls -al ../.ssh'
#a = 'cat cf/radio cfg tbl.json'
id = subscribe_packets([['CFE_ES', 'SHELL_TLM_PKT']])
cmd("CFE_ES SHELL with CCSDS_STREAMID 6150, CCSDS_SEQUENCE 49152, CCSDS_LENGTH 129,
CCSDS_FUNCCODE 3, CCSDS_CHECKSUM 0, CMD_STRING "+a.bytes.to_s+" , OUTPUT_FILENAME
/cf/shell.log")
wait 4
s = "";
while 1
  id, packets = get_packets(id, block: 2000, count: 100)
  if packets == nil
    break
  end
  packets.each do |packet|
    s = s+packet['SHELL_OUTPUT'].pack('c*')
    #if s.length > 500
      #p sprintf('%s', s)
      #s = ''
    #end
```

6:42

```
end
end

begin
  puts sprintf('%s', s)
rescue
  p s
end
#p s
```

safemode 6:48 PM

I can restart your whole diigitaltwin if that's ok? Anything you have onboard or changed could be lost



wyattearp 6:50 PM





safemode 6:51 PM

alright give me a few. i will llet you know when its back up



wyattearp 6:52 PM

Thanks!



wyattearp 6:59 PM

Confirmed to be back to running

thank you



safemode 7:00 PM

perfect

7:00

6:59

no problem thanks for reaching out



Tuesday, October 18th

wyattearp 2:53 PM

Is there currently an outage?



safemode 2:55 PM

Yeah sorry should be up in a second

Let me know if its not back online in 2-3 minutes



wyattearp 3:01 PM

No worries - just making sure we didn't accidentally break something

Wednesday, October 19th

2:56



RootLocus 2:24 PM

was added to finals-2022-spacebitsrus by OB1, along with Joe B. Also, douglett joined.



wyattearp 7:45 PM

Another question if you have a moment. The access bytes field of the UPDATE RADIO CONFIG command has a note that says "Access Bytes (last 16 bytes)"; however this field will throw an error if the value entered evaluates to more than a 16 bit integer. Is the note incorrect, or should the field be setup to accept up to 16 bytes?



Cydonia 7:47 PM

@wyattearp that is a typo - we will fix



wyattearp 7:49 PM Got it - thank you!

Thursday, October 20th



wyattearp 9:49 AM

@safemode could we get a DT reset? We appear to have lost all telemetry data on both cosmos and grafana



safemode 9:49 AM

will do



You are back up



wyattearp 9:56 AM

Thanks!



Deadwood 9:59 AM

yw



wyattearp 5:16 PM

Ok, we need a reset again. Someone ran a command that won't stop and then reset it and it hasn't come back. Sorry about that



2 replies

Last reply 14 days agoView thread



Deadwood 5:25 PM



Well tell them to stop doing that.



Reset ya in a sec.

5:25

5:30

Reset complete



wyattearp 6:57 PM

Thank you (apologies, didn't click send earlier)

Friday, October 21st



wyattearp 11:21 AM

Hi - we believe the following are unintentional

- 1.EPS DEVICE STAR telementry always shows 0; however, Grafana shows non-zero when it is on - is this expected?
- 2. Sending ADCS SET Q TRACKING GAIN doesn't seem to reflect the changes in ADCS -HK TLM PKT and doesn't seem to change the control behavior in either Cosomos or Grafana - is this expected?

(edited)



Last reply 13 days agoView thread



douglett 7:32 PM

Confirming receipt of the first docs drop



Deadwood 7:34 PM

Thank you

Saturday, October 22nd



meenmachine 10:55 AM

Here's your team container access credentials! Please verify you have access the game infrastructure from your AWS container after game start (5 minutes)

Zip

spacebits.zip Zip



douglett 10:56 AM

thanks





EJ 11:24 AM

was added to finals-2022-spacebitsrus by ST7.



wyattearp 12:45 PM

Can we clarify that | science-station | -82.4131 | 164.601 | 85.0 | specificuser | is a specific user or a rolling password?



Last reply 12 days agoView thread



wyattearp 5:23 PM

Is it expected that GENERATE_TOKEN under the SPACEFLAG expected to throw a [SPACEFLAG] Unused command function code 3 received ?





meenmachine 5:26 PM Working as intended.



wyattearp 7:11 PM

We believe we might be broken. How much does it cost a software reset? We're not sure that we killed it, but it's weird that we're passing the downlink SLA but then not seeing any TLM.





safemode 7:17 PM

We are pretty sure your satellite is dead, we think this occurred within the parameters of the game. We can reset your software for you.

7:17

5 minutes from request



wyattearp 7:18 PM yep- do it to it



safemode 7:18 PM

You are being reset since you asked about this more than 5 minutes ago



wyattearp 7:18 PM copy that



Cydonia 7:18 PM

reboot issued - verifying now

i think you are back online



wyattearp 7:23 PM

copy that



safemode 7:25 PM

you have been reset



wyattearp 7:31 PM

question - we have dumped a lot of data from the webserver hack one, which includes other sats access bytes, this is in scope, correct?





safemode 7:34 PM

Yes

3



wyattearp 9:01 PM



We need a radio reset

9:02

7:22

can we select a configuration of const BPSK, samples per sym 8, access bytes 0x7799 if possible



spaceymcspaceface 9:04 PM

also need a desired chan ID



wyattearp 9:05 PM

chan 11 please



Cydonia 9:07 PM

just to be clear we will also reset your processor when we do this

9:07

is that ok



wyattearp 9:09 PM

ok



Cydonia 9:09 PM

ok cool - im about to reset you and then update your radio

9:09

then i will confirm the settings back to \boldsymbol{u}

9:12

ok i reset you and your radio

9:12

confirmation of settings coming now

9:13

CHANNEL: 11

FEC: 4 SPS: 8

ACCESS CODE: 0x7799 CONSTELLATION: BPSK



wyattearp 9:13 PM

confirmed



Cydonia 9:14 PM

ok thanks for bearing with me while i typed that out. Trying not to mistype



wyattearp 9:14 PM



no worries - we'd prefer to minimized these requests naturally



wyattearp 11:23 PM

Apologies if this was covered in the live stream and we missed it, but a question on game time during the break. Will time:

- continue to progress forwards in "real-time"?
- pause and restart with a time aligned with "real-time"?
- pause and restart with time aligned to where it was paused?



safemode 11:26 PM

Get back to you in a couple





wyattearp 11:46 PM

Also, we're uncertain if the science data system is operating correctly, but we pretty sure we had the procedures correct:

- We reconfigured into the science channel while we were in Cordoba
- We kept this configuration in visibility of the science station
- We reconfigured back to the network channel 5 min after we had visibility at McMurdo
- We attempted to received TLM on both science and network for the science mission and see no science data messages

The only thing we haven't tried is "pointing" the satellite at the science station, but we believe this isn't what's intended and this should be a follow up steep with respect to performing the science missions based on the intel we've collected.

- 1. Set spacecraft RX settings to science station settings
- 2. Receive science missions transmitted from science stations
- 3. Downlink the science mission to normal ground station to find out what to do
- 4. Command spacecraft to point at the specified science target
- 5. Obtain science data and downlink to the science station for points

Can we get an brief check for normal operation?





Cydonia 11:48 PM

can u tell us the mission number you were trying to do?

11:48

im going to track this



wyattearp 11:49 PM

We've never received a mission number from the science station when listening on the science station RX settings over the station



Cydonia 11:49 PM

ok so you havent received the mission yet



wyattearp 11:50 PM

correct



Cydonia 11:51 PM

do you know about the time you did this



wyattearp 11:52 PM

Yes - give me a moment to pull up the commands, looking at ~12:30 game time



Cydonia 11:52 PM

ok thanks, i could have probably found it on my own but its much easier with the time



wyattearp 11:54 PM

No worries, I'm seeing if I can pull the exact time / packets for you

11:55

roughly this time:

TARGET, PACKET, CCSDS_STREAMID, CCSDS_SEQUENCE, CCSDS_LENGTH, CCSDS_FUNCCODE, CCSDS_CHECKSUM, ACCESS_BYTES, FREQUENCY, SAMPLE_PER_SYMBOL, CONSTELLATION, PASSWORD, PACKET_TIMESECONDS, PACKET_TIMEFORMATT ED, RECEIVED_TIMESECONDS, RECEIVED_TIMEFORMATTED, RECEIVED_COUNT

 RADIO, UPDATE_RADIO_CONFIG, 6547, 49152, 22, 3, 237, 9000, SCIENCE, 8, BPSK, firey-ball, 1666496070.6178355, 2022/10/23 03:34:30.617, 34 RADIO, UPDATE_RADIO_CONFIG, 6547, 49152, 22, 3, 209, 25682, NETWORK, 8, BPSK, firey-ball, 1666496361.3845935, 2022/10/23 03:39:21.384, 1666496361.3845935, 2022/10/23 03:39:21.384, 35 RADIO, UPDATE_RADIO_CONFIG, 6547, 49152, 22, 3, 162, 30514, NETWORK, 8, BPSK, firey-ball, 1666496555.275123, 2022/10/23 03:42:35.275, 1666496555.275123, 2022/10/23 03:42:35.275, 36 RADIO, UPDATE_RADIO_CONFIG, 6547, 49152, 22, 3, 211, 35518, NETWORK, 8, BPSK, firey-ball, 1666496836.405264, 2022/10/23 03:47:16.405, 37 RADIO, UPDATE_RADIO_CONFIG, 6547, 49152, 22, 3, 92, 39457, NETWORK, 8, BPSK, firey-ball, 1666496914.3267212, 2022/10/23 03:48:34.326, 38



Cydonia 11:56 PM

i am pretty sure the challenge is working but im going to track this down and verify

11:56

it will take me a minute to sort through the data



wyattearp 11:56 PM

copy that - we'll go back and double check our sides as well

Sunday, October 23rd



Cydonia 12:05 AM

yeah the science station is working as expected



wyattearp 12:06 AM

Copy that. After some internal discussion, we think we realize where we've gone off the rails. Appreciate the check.





Cvdonia 12:06 AM

cool, thank you for checking. always happy to double check



wyattearp 9:53 AM

Hi - our telemetry didn't seem to be operating correctly. Can we get a radio reset please?

CHANNEL: 1 FEC: 4 SPS: 8

ACCESS CODE: 0x4587

CONSTELLATION: BPSK





Cydonia 10:01 AM ok verifying



wyattearp 10:02 AM

The symptoms were that we were only getting TLM from the CFE and nothing else and no commands would process if that helps.



Cydonia 10:04 AM

ACCESS BYTES: 0x4587

SPS: 8
FEC: 4
CHANNEL: 1

CONSTELLATION BPSK



wyattearp 1:03 PM

sadly, we lost our radio comms. Can we please get a reset?

ACCESS BYTES: 0xf006

SPS: 4
FEC: 4
CHANNEL: 1

CONSTELLATION BPSK



wyattearp 1:14 PM

@Cydonia



Deadwood 1:20 PM

Sorry, Wyatt. A bit task loaded but we'll get to you in a min.



spaceymcspaceface 1:21 PM

Im on it!

ACCESS BYTES: 0xf006

SPS: 4 FEC: 4

CHANNEL: 1

CONSTELLATION BPSK

Your FSW has been reboot and new radio settings are active





douglett 1:26 PM thank you!



wyattearp 6:23 PM

after the competition is over - will there be access to a full COSMOS export / our team telemetry data? we'd really like to be able to decompose what happened a couple of times to understand if what we think occurred actually occurred.



spaceymcspaceface 6:27 PM

yes I think we can do that, not guaranteed but we are in the process of capturing all of that



douglett 6:28 PM

Thank you - we would appreciate that to make our write up easier



SirGoon 6:29 PM

What did your team think of this years game?



douglett 6:31 PM

It was a lot of fun!

A very good first exprience for me personally



wyattearp 6:33 PM

6:32

It was great! We would have personally liked to have the "pause" really be a blackout of ground stations so everyone had to think about putting their sat in a safe mode for the duration,- would



totally would have added to our SLA



SirGoon 6:34 PM

Excellent. I'm glad you guys enjoyed the game. We were really trying to achieve a unique experience with all the ground station management aspects that the digital twin allowed us.



Cydonia 6:34 PM

@wyattearp we talked about "what is the pause" a lot

6:34

even that mechanic

6:34

lots of debate over that



wyattearp 6:35 PM

I'm sure it was hard to figure out and get right

6:36

I'm going to poll the team and ask if we found anything else while we were working, but this was a great contest and you all clearly put a heck of work into it. Can't wait for 2023!





meenmachine 6:39 PM

Did you pop the FTP challenge?



wyattearp 6:45 PM

We did not

6:45

So close but couldn't fit the exploit in the size



meenmachine 6:45 PM

How were you guys able to pop puzzlebox?



wyattearp 6:46 PM

We were collecting telemetry every single time. Fired up a ground station, at one point we decided to go back and grab over all of our telemetry that we found, and we found that we had a flag sitting there.





meenmachine 6:46 PM

Didn't realize that you solved one and not the other until about 10 minutes before the game ended.

6:46

Loooool. love it



wyattearp 6:47 PM

That's part of the reason that we want to see all of the data because a lot of people were sending



things at the same time and we're not exactly certain what happened



spaceymcspaceface 6:47 PM

Yesssss thats glorious



douglett 7:11 PM

I think an hour had elapsed between us getting that flag telemetry packet and us deciding to check for flags



SirGoon 9:14 PM



Monday, October 24th



wyattearp 9:53 AM

Low-priority ask - will we will still access to the digital twin? We're curious if we can use it for some of our screenshots for write ups



meenmachine 11:26 AM

Is access currently cut off for you guys?



safemode 11:29 AM

We have not yet revoked access. Probably will in the next couple days. Feel free to use it to grab screenshots though.



wyattearp 12:16 PM

Copy that - I think our DT is there but busted the last I heard, we'll totally take a reset if someone has



a free opportunity



meenmachine 12:43 PM

You should be able to ssh into the emulation and run it by hand if I remember correctly

12:43

Look at the slide deck we sent y'all again and try and see if you guys can do that

12:44

Everyone's flying today so responses will probably be spotty.



wyattearp 1:39 PM

Right, we can ssh in but the sat is crashed. Understood on the flying, just let us know if someone does get the chance to bounce it. Appreciate everything and fly safe!!!



safemode 1:46 PM

Yeah the fsw is setup for manual so you could run with GDB and debug the fsw challenges



wyattearp 1:47 PM

Got it

Wednesday, October 26th



wyattearp 4:37 PM

Regarding the finals write up, is there any preferred format / organization since the game was significantly different this year? Also, do you have a "due date" since I'll have to get our content through internal review before I can let send it out.





spaceymcspaceface 7:17 PM

Format is pretty open-ended, it's really up to your team in a lot of ways of what you would be happy being presented publicly and associated with your name. As for due date I don't know the answer but hopefully one of our crew that is monitoring chat can confirm



7:19

Also we've gotten some very excited/fun responses about your telemetry grab on puzzlebox so thanks for sharing that!







meenmachine 8:06 PM

You can also refer to finals writeup submissions from last year if you'd like to take a look at what teams have submitted before. (edited)



wyattearp 8:49 PM

Thanks, we'll try to make it awesome - thank you all once again for this awesome experience - I am so stoked to see what you all pull out for quals in 2023!

