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Fatal exception (0) #3138

Closed

hulr opened this issue on 15 Apr 2017 · 17 comments

 hulr commented on 15 Apr 2017

Hello everyone, here my problem description:

Hardware

Hardware: NodeMCU v2 Dev Board

Core Version: 2.3.0

Description

I have two exact same setups including:

- Node MCU v2 Dev Board
- Power supply: DC 5V 1A (same model)
- USB 2.0 <-> Micro USB cable (same type)

After mutliple tests with example sketches (e.g. ESP8266 Blink) and flashing the original NodeMCU firmware I still have no luck.

I think it's a hardware malfunction or do you have other possible solutions?

Settings in IDE

Board: NodeMCU 1.0 (ESP-12E Module)

CPU Frequency: 80MHz

Flash Size: 4M (3M SPIFFS)

Upload Speed: 115200

Upload Using: Serial

Debug Messages

```
00000000, epc3=0x00000000, excvq?m?
ets Jan 8 2013,rst cause:2, boot mode:(3,7)

load 0x4010f000, len 1384, room 16
tail 8
chksum 0x2d
csum 0x2d
vc9f0c112
~ld
Fatal exception (0):
epc1=0x40210bf4, epc2=0x00000000, epc3=0x00000000, excvaddr=0x00000000, depc=0x00000000
Fatal exception (0):
epc1=0x40210bf4, epc2=0x00000000, epc3=0x00000000, excvaddr=0x00000000, depc=0x00000000
Fatal exception (0):
epc1=0x40210bf4, epc2=0x00000000, epc3=0x00000000, excvaddr=0x00000000, depc=0x00000000
```

decoded with EspExceptionDecoder:

```
0x40210bf4: scan_parse_beacon at ?? line ?
```



tttapa commented on 22 Apr 2017

Could be a flash memory failure.

Exception (0) indicates an illegal instruction.

I sometimes get this when uploading at speeds > 115200 baud, but reuploading always solves the problem.

 hulr commented on 22 Apr 2017

Author

Thank you for your comment.

I tried to reupload the compiled sketch using a baud rate of 9600. After a failed attempt with the Arduino IDE (same fatal exception message 0), I used the esptool and got other exception messages. It's funny that I'm receiving different exception messages on each reset:

1st reset

```
Fatal exception 0(IllegalInstructionCause):  
epc1=0x402199e8, epc2=0x00000000, epc3=0x00000000, excvaddr=0x00000000, depc=0x00000000  
Fatal exception 28(LoadProhibitedCause):  
epc1=0x401061da, epc2=0x00000000, epc3=0x00000000, excvaddr=0x00000300, depc=0x00000000
```

2nd reset

```
Fatal exception 0(IllegalInstructionCause):  
Fatal exception 9(LoadStoreAlignmentCause)
```

3rd reset

```
0x402199b7: rijndaelKeySetupEnc at ?? line ?  
0x40219922: rijndaelKeySetupEnc at ?? line ?  
0x40224f7c: sys_timeouts_init at  
/Users/igrokhotkov/ espressif/arduino/tools/sdk/lwip/src/core/timers.c line 272  
0x40219e24: user_uart_wait_tx_fifo_empty at ?? line ?  
0x40105294: wdt_feed at ?? line ?  
0x40219e0e: user_uart_wait_tx_fifo_empty at ?? line ?  
0x40105570: wdt_feed at ?? line ?
```

4th reset

```
0x40106058: system_restart_core at ?? line ?  
0x4021af53: system_restart_local at ?? line ?  
0x4021ae93: system_restart_local at ?? line ?  
0x40201f21: __wrap_system_restart_local at  
C:\Users\USER\AppData\Local\Arduino15\packages\esp8266\hardware\esp8266\2.3.0\cores\esp8266\core_esp  
line 190  
0x402199e8: rijndaelKeySetupEnc at ?? line ?  
0x40201f37: __wrap_system_restart_local at
```

```

C:\Users\USER\AppData\Local\Arduino15\packages\esp8266\hardware\esp8266\2.5.0\cores\esp8266\core_esp
line 190
0x402199e8: rijndaelKeySetupEnc at ?? line ?
0x402138b8: ieee80211_send_action at ?? line ?
0x40231d80: sleep_reset_analog_rtcreg_8266 at ?? line ?
0x402199e8: rijndaelKeySetupEnc at ?? line ?
0x40219c3f: user_uart_wait_tx_fifo_empty at ?? line ?
0x402199e8: rijndaelKeySetupEnc at ?? line ?
0x401052b3: wdt_feed at ?? line ?
0x40105294: wdt_feed at ?? line ?
0x402199e8: rijndaelKeySetupEnc at ?? line ?
0x401052b3: wdt_feed at ?? line ?
0x402199e8: rijndaelKeySetupEnc at ?? line ?
0x4021a70a: ets_vsprintf at ?? line ?
0x4021a733: ets_sprintf at ?? line ?
0x402298f2: chip_v6_rf_init at ?? line ?
0x4021ccee: wifi_station_set_default_hostname at ?? line ?
0x4021ccd9: wifi_station_set_default_hostname at ?? line ?
0x4021ccc7: wifi_station_set_default_hostname at ?? line ?
0x40224e35: sys_timeout at /Users/igrokhotkov/espressif/arduino/tools/sdk/lwip/src/core/timers.c
line 296
0x402199b7: rijndaelKeySetupEnc at ?? line ?
0x40219922: rijndaelKeySetupEnc at ?? line ?
0x40224f7c: sys_timeouts_init at
/Users/igrokhotkov/espressif/arduino/tools/sdk/lwip/src/core/timers.c line 272
0x40219e24: user_uart_wait_tx_fifo_empty at ?? line ?
0x40105294: wdt_feed at ?? line ?
0x40219e0e: user_uart_wait_tx_fifo_empty at ?? line ?
0x40105570: wdt_feed at ?? line ?

```

erase_flash

```
esptool.py --port COM3 erase_flash
```

```

esptool.py v1.3
Connecting....
Running Cesanta flasher stub...
Erasing flash (this may take a while)...
Erase took 10.1 seconds

```

write_flash

```
esptool.py --port COM3 --baud 9600 write_flash -fm dio 0x00000000 app.bin
```

```

esptool.py v1.3
Connecting....

```

wrote 241004 bytes at 0x0 in 231.8 seconds (7.7 KB/s) ...
Leaving...



lrmoreno007 commented on 22 Apr 2017

Contributor

Surely there is some problem that resets the board. Once uploaded the program, try to bypass the basic pins for good operation with a wire.

GPIO0-3V3

Reset - 3V3

GPIO15 - GND

CH_PD-3V3

It happened to me with a NodeMCU that had the reset pull up badly I solved it by removing it and putting a new one of an old motherboard.



hulr commented on 23 Apr 2017 • edited ▼

Author

I connected the pins as you mentioned, but it doesn't boot and I have no serial output.

wiring

D3 (GPIO0) - 3V3

RST - 3V3

D8 (GPIO15) - GND

EN - 3V3

In the meantime, I found out that I have two different versions of NodeMCU v2 Dev Boards. Do I have to change something in the board configuration or elsewhere?

flash_id

1st (works):

Manufacturer: ef

Device: 4016

2nd (fails):



lrmoreno007 commented on 24 Apr 2017

Contributor

Try one by one to find the problem, because it seems that you must have a short-circuit in some and everything is coming down.



hulr commented on 2 May 2017

Author

I sent it back and got a new one, it was a hardware malfunction. Thanks for your help.



hulr closed this on 2 May 2017



juanitoddd commented on 5 Jun 2017

This was happening to me aswell (Reboot loop with all sorts of Exceptions) and when I was about to ditch the module, I deleted the whole flash, re-uploaded my sketch and connected to a external 3.3v source and turn out to work !. I was using the 3.3v from my USB to TTL module. Apparently was causing my issue



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shivamkeshri commented on 12 Dec 2017

If you are getting fatal error exception like this:

Exception (3):

epc1=0x401003e9 epc2=0x00000000 epc3=0x00000000 excvaddr=0x4000cbd9 depc=0x00000000

In infinite loop in your serial monitor of arduino IDE .

This does not solve fatal error that occurs due to your program but in case your device goes in such condition that it can't be able to access program memory then it will work and try atleast one time to solve the problem.

This is the procedure to hard reset the nodemcu

(<https://www.youtube.com/watch?v=MHrm7axslml&t=146s>)

Step :

Install latest python version in you pc.(<https://www.python.org/downloads>)

Open cmd prompt as administrator .

Go to c:/program files or program files (x86)->python (your version)->Script. For this type (cd c:/program files (x86)/python(your version)/Script) then press enter .

Now type (pip install esptool).

Now download ESPlorer (<https://esp8266.ru/esplorer/>) version(Download ESPlorer.zip (v 0.2.0-rc6)) and extract the file and open executable jar file .

Now goto nodemcu firmware site (<https://github.com/nodemcu/nodemcu-firmware/releases>) and from download file (nodemcu_float_0.9.6-dev_20150704.bin) and copy this file into the c:/program files (x86)/python(your version)/Script folder .

Now in cmd prompt just type.

esptool.py --port COM(your port no.) --baud 115200 erase_flash

And press enter.

Note : you can see your port no. into the device manager .



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 **han-nes** commented on 28 Jan 2018 • edited ▼

@juanitodddd do you know the reason why 3.3v from the USB to TLL doesn't work? I tried to power up my Esp8266-03 using a voltage divider from 5v to 3.3v (47R and 1M) and it caused the same error...



 **devyte** commented on 28 Jan 2018

Collaborator

@han-nes you can't use a voltage divider to power the ESP. The current spikes cause voltage dips that result in resets and odd behavior.



In such cases you also could check your power supply. i just had similar issues, which was caused by a too low voltage as power supply. Cheers



 **Lorenzo9196** commented on 20 Jul 2018

I had the same problem, jjust verify the serial connection and make sure you are configurate your nodemcu



 **PrimeTime416** commented on 7 Jan 2019

So true for me with the power supply! I have one of the USB to serial TTL FTDI Breakout Boards and there are jumper pins for setting the VCC(io) to 3.3v or 5v http://osepp.com/wp-content/uploads/2012/01/OSEPP_FTDI-Rev1.1-Schematic.pdf and unfortunately I had it set to 3.3v going to my Adafruit Feather Hazzah which has a 5v to 3.3v regulator <https://learn.adafruit.com/adafruit-feather-huzzah-esp8266/downloads>, see the problem here! Anyhow so I just set the jumper to 5v VCC position and my problem went away +1: thanks for the insight I would not have resolved this issue without this initial post, thanks folks :)



 **hmallen** commented on 10 Jul 2019

For the sake of completeness I'll add that I also had this problem, except it occurred for me when powering the NodeMCU with a 12V adapter at the same time as being plugged into USB. I saw the shottky diode on USB in the schematic and assumed it wouldn't be a problem, but it didn't seem to like it very much.



 **ramanraja** commented on 16 Mar 2020 • edited ▼

In my experience, software problems have been the single most common cause of the error. It is difficult to debug your code without knowing anything about it, but general good practices that helped my team:

2. If you had a previous version of the code that was working without crashing, upload that code again. Then slowly add the new features one at a time and see what triggers the crash.
3. In general, keep developing the code a few lines at a time, and test it after every iteration. This will immediately point to the source of a crash as the latest changes in code.
4. Get a fresh NodeMCU/ ESP chip and load the code on it. If it works, the old chip is the suspect.
5. To check if Flash memory is corrupted, wipe out the memory from the Arduino IDE: select Tools/Erase Flash/All Flash Contents.
6. Before you do anything else, change the power supply with a robust 5V / 1A supply adapter for Node MCU. The power supply provided by FTDI programmers are always weak.
7. If everything else fails, solder a large capacitor (like 1000 MFD) very close to the power supply pin of the ESP chip. It is always a good practice to include this capacitor as part of your design, even if you are only using a bread board.



tingww commented on 16 Apr 2020

I got this problem on my nodeMCU 1.0 when working on my project with timer interrupt, solved it by adding ISR function to IRAM by adding keyword ICACHE_RAM_ATTR.



charithjperera commented on 25 Sep 2020

I had the same error messages as I had an optoisolator between D4 (GPIO2) and GND through a 2.2k. This load needed to be moved to another pin as D4/GPIO2 needs to be high to boot as per <https://randomnerdtutorials.com/esp8266-pinout-reference-gpios/>



Assignees

No one assigned

Labels

None yet

Milestone

No milestone

Linked pull requests

Successfully merging a pull request may close this issue.

None yet

14 participants

