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How to disable failed discrete-GPU  
(NVIDIA GeForce GT 650M) for 15"  
MacBook-Pro 10,1 (mid-2012) on High  
Sierra 10.13.4

29 Tuesday May 2018

i

16 Votes

It all started when my MacBook Pro showed me black screen after waking from sleep. After that, many times I would boot straight into Black Screen, and the only sign that the machine was awake could be just tested by pressing the CAPS LOCK key (turns on the button-light) or connecting an External USB with a indicator light.

I started asking myself why would this happen? Was it due to upgrade to High Sierra 10.13.3 or was it that my machine really developed some hardware problem? I asked a friend of mine what can I do and he suggested SMC Reset followed by PRAM (NVRAM) Reset. I tried all that, but it refused to work. I got my MacBook cleaned and then it booted fine. But as soon as, I started using it, all of a sudden it would show a Black Screen, but CAPS LOCK would still glow

green and so I would then reboot it again, only to Black screen. Sometimes, upon restarting the first problem message that I got was GPU panic like the one shown below:

Anonymous UUID: 32BD6DA8-14C2-38AD-E466-F3B6DDCE6F7F

Fri May 18 19:43:24 2018

\*\*\* Panic Report \*\*\*

panic(cpu 2 caller 0xffffffff7f916c29cf): "GPU Panic: mux-regs

Backtrace (CPU 2), Frame : Return Address

0xffffffff81f9073a90 : 0xffffffff800e66e166

0xffffffff81f9073ae0 : 0xffffffff800e796714

0xffffffff81f9073b20 : 0xffffffff800e788a00

0xffffffff81f9073ba0 : 0xffffffff800e620180

0xffffffff81f9073bc0 : 0xffffffff800e66dbdc

0xffffffff81f9073cf0 : 0xffffffff800e66d99c

0xffffffff81f9073d50 : 0xffffffff7f916c29cf

0xffffffff81f9073db0 : 0xffffffff7f916bf1ae

0xffffffff81f9073df0 : 0xffffffff7f916c2443

0xffffffff81f9073e30 : 0xffffffff800ec9f71c

0xffffffff81f9073ea0 : 0xffffffff800ec9f646

```
0xffffffff81f9073ed0 : 0xffffffff800e6a77e4
0xffffffff81f9073f40 : 0xffffffff800e6a7345
0xffffffff81f9073fa0 : 0xffffffff800e61f4f7
```

Kernel Extensions **in** backtrace:

```
com.apple.driver.AppleMuxControl(3.18.48)[09DFEF11-6
dependency: com.apple.driver.AppleGraphicsControl
dependency: com.apple.iokit.IOACPIFamily(1.4)[951
dependency: com.apple.iokit.IOPCIFamily(2.9)[1850
dependency: com.apple.iokit.IOGraphicsFamily(519.
dependency: com.apple.AppleGraphicsDeviceControl(
```

BSD process name corresponding to current thread: kernel\_task  
-----

So, I started Googling for this GPU Panic problem and found that many laptops had this issue and that many forums said it was all due to a faulty discrete GPU on the logic board. I missed the replacement program (as I was not even aware that it existed until I hit this problem) and now my machine is out of warranty (more than 5 1/2 years now). The machine is a 15" MBP 10,1 (mid-2012) with dual GPU system. I thought, if I could get Logic board changed, I should be okay, but in many forums many users who got that done were not still immune from that

problem. It had all the possibilities of appearing once more (even after changed GPU). Secondly, Logic board replacement is an expensive affair! Last option, of course, is to get a new MPB, but I wanted to wait till the WWDC June 2018 announcement.

Anyways, I still wanted to make sure that this is indeed the same GPU problem that I was facing. So, I thought may be I should downgrade the OS X to El Capitan or Sierra and rule out my High Sierra upgrade. After checking with both the older OS X, I started getting very frequent GPU panics, like the one pasted above. With laptop in comatose mode 😊 I literally had to resuscitate it using SHIFT + OPT + COMMAND + Power (SMC reset) by counting 10 and then do a CMD+OPT+R+P+POWER (NVRAM Reset) and the wait for sometime and power up again. It all then depended on the spirit to re-enter the machine and bring it to life again :)) Many times, it had barely woken up and slipped into coma again. Then sometimes it would work for 2/3 days straight, until I don't open up any BIG IDEs like IntelliJ or any program like Chrome or Firefox that caused a switch to dGPU.

In the Apple forums, I saw people had already disabled the on-board dGPU and they had a working system with only the built-in iGPU. However, it was done for older makes (year 2011) of the MBP. I searched for my particular make with NVIDIA GeForce GT650M Graphics card. I stumbled upon 2 links:

- 1) <https://github.com/mayankk2308/purge-nvda/blob/master/purge-nvda.sh> (NVIDIA driver)
- 2) <http://www.javajirawat.com/2018/02/macbook-pro-2012-broken-gpu-work-around.html> (AMD driver)

Thanks to them and I combined both their solutions to disable the dGPU on my system.

## The Steps:

### I. Sanity Check (find the number of GPUs):

1.
  - You can either go to Apple Menu > About This Mac... > Overview Tab > Press System Report... Under Hardware, look for Graphics/Displays...
  - Or you can type at terminal (and it displays the same information)

```
$ system_profiler SPDisplaysDataType
```

```
Built-In GPU (Integrated GPU - iGPU): Intel HD Graphics
```

```
...
```

```
...
```

```
Second GPU (Discrete GPU - dGPU): NVIDIA GeForce GT 650M  
gMux Version: 3.2.19 [3.2.8]
```

```
...
```

```
...
```

```
Display - Color LCD Resolution - 2880 x 1800 Retina Frame Buffer  
Metal: Supported, feature set macOS GPUFamily1 v3
```

## II. In Recovery Mode, do the following (Using the Recovery Terminal Utility), do the following:

2. Boot into Recovery Mode (by holding Command+R while pressing the power button). At terminal prompt, we will disable SIP (System Integrity Protection)

```
$ csrutil disable  
System Integrity Protection now disabled.
```

3. Reboot again in Single User mode.

```
$ reboot  
$ # and then hold Command+S keyboard buttons  
$ # to boot in single user mode.
```



### III. In Single User Mode, do the following:

4. Do a Hard disk Check:

```
$ /sbin/fsck -fy  
$
```

5. Mount Root file system in Read-Write (uw) mode:

```
$ /sbin/mount -uw /  
$
```

6. Create a backup directory to hold existing GeForce drivers:

```
$ mkdir /GeForce_save  
$
```

7. Move all the GeForce drivers to the backup directory:

```
$ mv /System/Library/Extensions/GeForce* /GeForce_save  
$
```

8. Delete Driver Cache

```
$ rm -rf /System/Library/Caches/com.apple.kext.caches/  
$
```

9. Force refresh of Driver cache:

```
$ touch /System/Library/Extensions  
$ kextcache -q -update-volume /  
$
```

10. Reboot again (into Recovery mode while holding Command+R)

```
$ reboot
```

## IV. In Recovery Mode, do the following (Using the Recovery Terminal Utility):

### 11. Remove Nvda Booting GPU

```
$ nvram boot-args="nv_disable=1"  
# OR append existing boot-args  
$ nvram boot-args="nv_disable=1 $(nvram boot-args 2>/dev/n  
$ nvram fa4ce28d-b62f-4c99-9cc3-6815686e30f9:gpu-power-pre  
$
```

### 12. Enable SIP (System Integrity Protection)

```
$ csrutil enable  
System Integrity Protection now enabled.
```

### 13. Reboot machine in normal mode

```
$ reboot
```

#### **IMPORTANT NOTE:**

1. By using `nvrn boot-args="nv_disable=1"`, you will lose brightness control (F1 / F2 keys) and sleep mode (clamshell open / close) does not work. When the computer awakes after sleep, it shows a black display. Also, the brightness slider will no longer show up in System Prefs -> Display. However, you can adjust the backlight to a fixed value. For example, I prefer the low backlight-level. In the recovery terminal,

```
$ nvrn backlight-level="\%00"
```

Various valid values in the increasing order of brightness are: 0%00, C%00, \ %00, z%00, %9f%00, %cb%00, %01%01, A%01, %8c%01, %e6%01, P%02, %d2%02, \ %03, %ff%03.

2. Once you use this patch, you won't be able to connect to external displays and project on that screen (as MacBook-Pro routes to external ports – HDMI and

thunderbolt using the dGPU)

3. When the computer after sleep, it shows a black display but the machine is still running the OS. To get the screen back, I need to turn the machine off. But this means, its improper shutdown when you have processes running. One solution is that you can remote desktop into the system by using Screen Sharing or VNC. Using this you can get back into the machine, and work like usual until the process completes and then shutdown the machine. Also, while using Screen Sharing, you can project the shared screen on an external display from that client machine.

**22nd Nov 2020 Update:** *I updated to Catalina 10.15.7 from 10.15.6. I could boot back into my Mac and work without any hiccups! I'll try installing Docker and see if it crashes again.*

**18th Nov 2020 Update:** *Yesterday I directly updated to Catalina 10.15.6 skipping Mojave and it went fine. I could boot back into my Mac and work with it just like before. I was not able to run Docker, as it would cause the OS to crash and I had no option but to remove it. Next step would be to apply the 10.15.7 Combo Supplemental update. Once I am able to get that done as well, I'll share my findings on this post. Stay tuned!*

*Earlier Update: I've updated to High Sierra 10.13.6. After this I applied the Security Update 2019-001 and it went fine. I could boot back into my Mac and work with it just like before. I have not updated to Mojave yet.*

## Sponsored Content

thoughts on “How to disable failed discrete-GPU (NVIDIA GeForce GT 650M) for 15” MacBook-Pro 10,1 (mid-2012) on High Sierra 10.13.4”

1. *said:*RAFH

March 6, 2020 at 1:21 am

I managed to fix the laptop awhile back following this guide, and its been fine for months...

but this morning i reset my PRAM (CMD + OPTION + P +R) because my when my laptop was booting it wasnt playing the usual chime sound as the apple logo/loading bar was displayed.

So i did this command, and my display went black, and now I'm stuck with a black screen again... did i mess something up? Any help would be appreciated, as I was a happy camper, and now worried that I wont be able to see / navigate the computer to do any fix... to fix the laptop awhile back following this guide, and its been fine for months...

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So i did this command, and my display went black, and now I'm stuck with a black screen again... did i mess something up? Any help would be appreciated, as I was a happy camper, and now worried that I wont be able to see / navigate the computer to do any fix...please help!

**REPLY**

- *said:*Dhaval Dalal

March 6, 2020 at 8:52 am

Follow the same process again and hopefully you should be fine.

### REPLY

- *said:*RAFH

March 7, 2020 at 6:50 am

Any idea what resetting the PRAM would have done to cause the issue to resurface?

I cannot get the screen to turn on at all...not sure how I can go about navigating the computer to try and fix the issue again...

- *said:*Dhaval Dalal

March 11, 2020 at 12:56 pm



I think your settings are reset to old and hence this problem. You can try resetting the PRAM again and maybe retry again 3-4 times and if LUCK favors the screen will be back and then follow this process again. Hope that may solve your issue.

2. *said:*Fishek

March 30, 2020 at 3:04 am

does anyone know if it works on catalina?

**REPLY**

◦ *said:*Stefan

April 23, 2020 at 6:00 pm

Yes, on my system (MacBook Pro, 2012, Retina) it worked fine with Catalina

**REPLY**

- *said:dodo*

April 26, 2020 at 3:21 pm

Yes I had this patch applied on high sierra and yesterday I went to upgrade to Catalina and it works as before.

I've got a macbook pro mid 2012 15" with nvidia dgpu

Hope this will help you, Cheers

### **REPLY**

- *said:shalin*

April 27, 2020 at 3:20 am

Yes, do this in sierra, then update to catalina. it works

### **REPLY**

- *said:*Dalton Grimm

April 28, 2020 at 3:07 am

Just tried. It did not. Could not get it to reboot after.

**REPLY**

- *said:*Jim

May 29, 2020 at 2:24 am

It has been working for a day on my mid 2012 macbook pro retina.

**REPLY**

- *said:*Vince Aguil

November 22, 2020 at 2:03 pm

Thanks for the code it worked perfectly I wanted to ask how to do you revert back to having the driver work normally. I'm afraid of messing up the computer and im not sure how to make these changes.

Thank you.

### **REPLY**

3. *said:*Kevin H. Weiss

May 10, 2020 at 7:05 am

I'm also having trouble on Catalina. Anybody tried this?

### **REPLY**

4. *said:*SC

May 12, 2020 at 7:38 am

the side effects like no display, brightness, and black screen after sleep seem brutal and unacceptable. Isn't there a better way than this to bypass Nvidia GPU more simply? Gfxconfig 2.4.1 util seems to be crashing the system too.

## REPLY

5. *said:sc*

May 12, 2020 at 7:47 am

This procedure does not work overall. My system is stuck while booting after the last reboot. Seems like this bogus procedure hosed my system completely! The hint was that `rm -rf /System/Library/Caches/com.apple.kext.caches/` step didn't not work in single user mode. Tried with `sudo` as well. It gave an error that operation not permitted on this read only file system (which I thought we had addressed with the `-uw` step above). Anyway, I will look to revert these changes. Meanwhile PLEASE DO NOT USE THIS PROCEDURE, IT IS FAULTY!

## REPLY

6. *said:psk*

June 1, 2020 at 2:41 am

I had the failing GPU problem since 2 years ago. I found acceptable solution by booting with:

```
$ sudo nvram fa4ce28d-b62f-4c99-9cc3-6815686e30f9:gpu-power-prefs=%01%00%00%00
```

and by using gSwitch (<https://codyschrank.github.io/gSwitch/>) to force MacOs to use integrated GPU only. However, unexpected blank screen could occur as some applications may temporary force the use of discrete GPU.

A week ago I found an optimal solution. I'm using MacOs Catalina 10.15.5 with discrete GPU powered off and both screen brightness and sleep/awake functioning normally.

I followed the instruction posted hese by ferakles:

<https://dhavaldalal.wordpress.com/2018/05/29/how-to-disable-failed-discrete-gpu-nvidia-geforce-gt-650m-for-macbook-pro-101-mid-2012-on-high->

sierra-10-13-4 / comment-page-1 / #comment-975

then, as NativeDisplayControl was not working on my system (don't ask me why), I followed this post to replace AppleMuxControl.kext after installing Catalina:

<https://forums.macrumors.com/threads/disable-a-failed-amd-gpu-on-a-2011-macbook-pro-grub-solution.2087527/post-27525770>

Basically, I'm using the GRUB solution to power-off the Nvidia GeForce before booting. Then, I replaced the MacOs Catalina version of AppleMuxControl.kext with the Sierra version to resolve the screen brightness and the sleep / awake issue.

## **REPLY**

- *said:*Kang

November 16, 2020 at 8:33 pm

Can you post command line of how you replaced the kexts? -Seems impossible in Catalina due to read/write and splitting of system and date..

### **REPLY**

7. *said:*Alex

June 5, 2020 at 3:27 pm

MacBook early 2013 A1398 turned off in NVRam GeForce, it worked perfectly on the integrated Intel, after installing update 10.15.4 it stopped coming out of sleep. The black screen and for a second every 7-10 seconds the keyboard backlight lights up.

Installation 10.15.5 did not change anything.

### **REPLY**

8. *said:*Doug

June 13, 2020 at 9:58 pm



Tried this on my 2012 Retina with Mojave, and now it won't boot. Fun!

## **REPLY**

9. *said:*Felix

June 18, 2020 at 6:07 pm

Hi, worked for me too 😊 Not working brightness keys aren't the problem but know my screen brightness is significantly darker than before. Any idea to get back the 100% of display brightness?

## **REPLY**

10. *said:*Felix

June 18, 2020 at 6:08 pm

\*now (excuse for my English please)

## **REPLY**

11. *said:*RAFH

June 19, 2020 at 4:21 am

I accidentally reset my pram / smc , and i believe it reset the brightness of the display to zero. Does anyone have any advice on how I could change it back to a higher level of brightness, but doing this while I cannot see anything? It would really be appreciated as everything was working fine after I disabled the GPU, until I did this pram / smc reset...

Thanks in advance

### **REPLY**

12. *said:*Minhazul Huda

June 27, 2020 at 5:38 pm

It worked with my Catalina!!! thanks a lot. You saved my life. One thing, I cannot adjust the brightness to a fixed value using the way you mentioned. Any suggestion about it. Thanks again.

## REPLY

- *said:*Minhazul Huda

June 28, 2020 at 1:55 am

Also there is now way to set a fix value for the screen brightness? It's really too bright. Thanks again.

## REPLY

- *said:*sundar

October 5, 2020 at 7:51 pm

Hi, can you please let me know how to increase the brightness. Tx.

13. *said:*morph

June 30, 2020 at 3:24 am

is there any difference in just using gfxcardstatus <https://gfx.io/> and setting it to integrated only. that way at least you can continue to use screen brightness etc.

## **REPLY**

- *said:morph*

June 30, 2020 at 3:25 am

i have seen similar issues on a MBP 2012 Retina with Nvidia dGPU, it works erratically. Other advantage of just using the integrated setting is that fans don't spin up all the time.

## **REPLY**

14. *said:[umashankarkv](#)*

July 17, 2020 at 10:06 pm

Hi, did this patch on my mid 2012 MBP with Catalina, but it is getting stuck when I try to boot normally...it never boots normal. Any suggestion?

## REPLY

- *said:*Dhaval Dalal

July 18, 2020 at 5:20 pm

no idea...I have not yet tried Catalina

## REPLY

- *said:*umashankarkv

July 20, 2020 at 2:07 pm

Finally, it worked – (without the brightness and awake from sleep features). I just downgraded to High Sierra and did the patch. Later upgraded to Catalina.

Thanks a ton Dhaval!

Couple of things I encountered.

1. When I tried to apply this patch with Catalina OS, Step8 – Delete drive cache never happened – returned error with read only access. (May be that is something to do with the file system I believe (Despite mounting the disk with read and write access))

2. After updating to Catalina 10.15.4 the Nvidia information is not available/ visible in the system report – Graphics/ Displays. But once you update the OS to 10.15.6 the Nvidia information is back. No need to worry, that won't affect the applied patch.

15. *said:*Giorgio

July 18, 2020 at 2:10 pm

I had the failing GPU problem since 2 years ago. I found acceptable solution by booting with:

```
$ sudo nvram fa4ce28d-b62f-4c99-9cc3-6815686e30f9:gpu-power-prefs=%01%00%00%00
```

and by using gSwitch (<https://codyschrank.github.io/gSwitch/>) to force MacOs to use integrated GPU only. However, unexpected blank screen could occur as some applications may temporary force the use of discrete GPU.

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then, as NativeDisplayControl was not working on my system (don't ask me why), I followed this post to replace AppleMuxControl.kext after installing Catalina:

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Basically, I'm using the GRUB solution to power-off the Nvidia GeForce before booting. Then, I replaced the MacOs Catalina version of AppleMuxControl.kext with the Sierra version to resolve the screen brightness and the sleep / awake issue.

## **REPLY**

- *said:*Andy

September 6, 2020 at 12:38 am

Which macbook pro do you have? Can you use it properly with an external display?

## **REPLY**

- *said:*Giorgio



November 18, 2020 at 2:18 am

Dear Andy,

I have an early 2013 15" Retina MBP. I haven't tried the MBP with this solution with an external display, but I would bet it will work.

- *said:*Emiliano

September 17, 2020 at 1:43 am

Hello Giorgio. I followed your recommendation. I have successfully set the GRUB solution to power-off the Nvidia GeForce before booting and now trying to resolve the screen brightness and the sleep / awake issue.

NativeDisplayControl is not working for me either. My question is: by following the instructions to replace the MacOS Catalina version of AppleMuxControl.kext with the Sierra version would I solve both issues?

Or should I also install the kext from

<https://github.com/timpalpant/NVDAGPUWakeHandler> ?

My problem is that I don't know how to compile from the github content to get the kext. Any guide or help to get this done?

## REPLY

- *said:*Giorgio

November 18, 2020 at 2:16 am

Dear Emiliano,

follow the post #179 by nsgr here:

<https://forums.macrumors.com/threads/disable-a-failed-amd-gpu-on-a-2011-macbook-pro-grub-solution.2087527/post-27525770>

You can download the Sierra kext and then follow the instruction to install the Sierra version of AppleMuxControl.kext on Catalina.

16. *said:*Major

August 6, 2020 at 5:45 pm

Hi guys – great to see this thread evolve. I am about to upgrade a MBP 15 inch Mid 2012 (A1286) with a SSD. This is a lovely 2.3 Ghz / Core i7 (non Retina) machine that has issues with the dGPU and was modified some time ago to boot without dGPU enabled. Amazingly it works with WakeFromSleep and the screen brightness also works... I did not do the modification myself but understand it was done using a bootable Linux to make the changes. SO... my lazy question.. Once I swap out the drive what is the best way to proceed? Also – has anyone tried this technique to resolve the IC as per Louis Rossman for (A1398) : <https://www.youtube.com/watch?v=4gH1gBRneZk>  
Thanks again all!

## **REPLY**

17. *said:*George Vlahakis

August 15, 2020 at 4:06 pm

Thank you for a great guide and to the point! I have an early 2013 retina MBP and I set the GRUB.cfg as per – ferakles instructions and all works.

However, for unknown to me reasons, during boot the time to show the grub menu is rather huge (more than 10-15 sec) and then again when selecting the Mac partition I wait for another 10 secs.

Furthermore, when trying restarting OSX I get into a weird reboot situation where I also need to wait for extend time and eventually spawns the Apple logo and then reboots.

Any idea why these are happening and how I can go about speeding things up on this side?

PS: I have not done the sleep patch or the brightness kext.

## **REPLY**

18. *said:andy*

September 6, 2020 at 12:40 am

Anyone has a solution that could work with an external display?

## REPLY

19. *said:*Archer

November 10, 2020 at 1:02 am

I managed to fix the laptop awhile back following this guide, and its been fine for months...

but this morning i reset my PRAM (CMD + OPTION + P +R) because my when my laptop was booting it wasnt playing the usual chime sound as the apple logo/loading bar was displayed.

So i did this command, and my display went black, and now I'm stuck with a black screen again... did i mess something up? Any help would be appreciated, as I was a happy camper, and now worried that I wont be able to see / navigate the computer to do any fix... to fix the laptop awhile back following this guide, and its been fine for months...

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So i did this command, and my display went black, and now I'm stuck with a black screen again... did i mess something up? Any help would be appreciated, as I was a happy camper, and now worried that I wont be able to see / navigate the computer to do any fix...please help!

## REPLY

- *said:*Luis Alberto

November 15, 2020 at 6:01 am

Yes, i had the same problem, i had the great idea of restart my VRAM and the PRAM as you. And after a long time of work (aplying this tutorial) my 2013 MP Retina 15" showed the blackscreen again.

First of all its important to stand that the blackscreen problem is a problem generated for heat on the GPU, in my case i opened the macbook and i changed the termal paste, and put a mid size fan (one of those used to cool a room) pointed directly to the motherboard I turned on the Mac again without put the chassis (this gave me a few minutes) until the black screen will appeared again and i applied this tutorial quickly .

I hope the idea was understood, it works for me but sometimes you will have turn on the Mac until the Mac logo appears, because it doesn't appear the first time that you change the termal paste.

Sorry for my english my native language is spanish if you want to correct me i will thank you.

## REPLY

- *said:*Dhaval Dalal

November 16, 2020 at 2:03 pm

I used to put ice-packs below the mac to let it cool down and have a USB fan...and then have worked out this solution, after lots of tries! I did not do any soldering or thermal paste change.

20. *said:*Jeevan Devasia

November 11, 2020 at 5:27 pm

I think you can also disable SIP in the single user mode itself instead of going all the way to the recovery (cmd + R)

**REPLY**

21. *said:*vince

November 29, 2020 at 3:08 am

Hello I wanted to ask what are the steps to revert back to normal.

**REPLY**



22. *said:*John Doe

December 20, 2020 at 5:56 pm

Ok but all this method works if you can startup the system. What can I do if only a glitched screen is displayed while startipng up the system?

**REPLY**

23. *said:*sw1002

January 4, 2021 at 12:16 pm

Can You post a guide how to reactivate the dGPU ? I will have a repair of the logic board soon, therefore I need it,

Many thanks!!

Thomas

**REPLY**

24. *said:*Thomas Lodzinski

January 7, 2021 at 11:25 am

How can I revert the patch to the previous state (and have the GPU enabled)?  
I assume I have to move back the drivers from the directory and enable the GPU?

Can You please write the appropriate lines of code I have to type?  
Many thanks,

## **REPLY**

25. *said:*KC

April 20, 2021 at 9:33 pm

I just applied this fix on my Retina – mid 2012, and it has resolved the issue. I was using Catalina 10.15.5 or 10.15.6 and after applying this fix, I applied the update to 10.15.7 and still everything is working as expected. Only issue now is that I don't have sleep option, and brightness control. Hope this helps anyone else in my position.

Also, a request I have 1 => if any one knows sleep / brightness fix then please share.

## **REPLY**

- *said:*Giorgio

July 14, 2021 at 2:45 pm

In order to get brightness and sleep / awake functioning, you have to replace the MacOS Catalina version of AppleMuxControl.kext with the Sierra version to resolve the screen brightness and the sleep / awake issue. Read my post here of June 18th 2020.

## **REPLY**

26. *said:*Michel B

May 3, 2021 at 2:47 am

I applied the fix to my early 2013 PWB Retina 15" which runs Mojave 10.14.6 and it works perfectly. Many thanks. Note that the Command+S single user mode has been deactivated in Mojave, but Command+S+R still works, though it is no documented by Apple.

## **REPLY**

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