Arch Linux

Index » Kernel & Hardware » [Solved] Random freezes with AMD Ryzen on Linux 5.0

Pages: **1** **Topic closed**

hasdf 2019-04-10 16:10:05 #1

Member

Registered: 2014-11-18

Posts: 7

Hi,

Since about two years I get random freezes with archlinux on my desktop PC.

I don't want you to troubleshoot my problems, but maybe you can help me to figure out how to troubleshoot at all.

Whats the best/fastest way to find the problem? Is there any CLI-Magic to get Error-Statistics from journalctl?

Problem Description
* Freeze = Mouse not moving, Ctrl+Alt+Fx not working, Keyboard Numpad LED always on, sound works sometimes.
* Freezes absolutely random ~5 times a week
* Works for hours/days without freezes even at high load
* only way out is reset the system

System Information
* Kernel: 5.0.2-arch1-1-ARCH
* Fileystem: LUKS > LVM >

My PC
* CPU: AMD Ryzen 5 1600

* Mainboard: Asrock AB350 Pro4
* GPU: Radeon HD 6850
* RAM: G.SKILL F4-3200C16-8GVKB 2x8GB
* nvme: Samsung SSD 970 EVO 500GB

Thanks in advance!

Last edited by hasdf (2019-04-19 16:27:31)

Offline

Morn

2019-04-10 16:29:13 #2

Member

Registered: 2012-09-02
Posts: 737

```
journalctl |grep -i "hardware err"
```

to make sure it is not the Linux Ryzen power management bug. If you see any output that would be bad.

I suppose adding "processor.max_cstate=1" to the kernel boot options to see if that avoids freezes is always worth a try on Ryzen.

Why did you wait two years to investigate this?

Offline

hasdf

2019-04-10 16:49:41 #3

Member

Registered: 2014-11-18
Posts: 7

Thank you for your fast reply!

> **Morn wrote:**
>
> ```
> journalctl |grep -i "hardware err"
> ```
>
> to make sure it is not the Linux Ryzen power management bug. If you see any output that would be bad.

This is the output. I had more freezes since April 03.

```
➜  ~ journalctl |grep -i "hardware err"
Apr 03 21:10:00 martin-desktop kernel: mce:
Apr 03 21:10:00 martin-desktop kernel: mce:
Apr 03 21:10:00 martin-desktop kernel: mce:
Apr 03 21:10:00 martin-desktop kernel: mce:
```

> **Morn wrote:**
>
> I suppose adding "processor.max_cstate=1" to the kernel boot options to see if that avoids freezes is

> always worth a try on Ryzen.

Trying to add this.

> **Morn wrote:**
>
> Why did you wait two years to investigate this?

Laziness and because everytime I tried to investigate, the error didn't occur... This time I lost 2h of work and was angry about it

Last edited by hasdf (2019-04-10 16:52:00)

Offline

Morn

2019-04-10 17:17:35 #4

Member

Registered: 2012-09-02
Posts: 737

Yes, those are the Ryzen hardware errors I was expecting. In 2017 we had forum threads about this issue. That power management setting has helped for me at least, for other possible fixes see https://wiki.gentoo.org/wiki/Ryzen#Rand … mce_events

> **hasdf wrote:**
>
> > **Morn wrote:**
> >
> > Why did you wait two years to investigate this?
>
> Laziness and because everytime I tried to investigate, the error didn't occur... This time I lost 2h of work and was angry about it

It's a miracle you did not lose more data during all that time. Linux file systems are simply not made for daily crashes...

Offline

hasdf

2019-04-19 16:26:39 #5

Member

Registered: 2014-11-18
Posts: 7

Seems like adding "processor.max_cstate=1" to the kernel boot options has solved this issue.

Thank you Morn for your help!

Offline

2019-04-19 16:37:11 #6

thorstenhirsch

Member

Registered: 2005-08-03
Posts: 87

Offline

I think you don't need to set it to 1. I also had freezes with the same CPU, but setting it to 5 was enough to fix the problem:

```
processor.max_cstate=5 rcu_nocbs=0-11
```

You see I also added rcu_nocbs=0-11 in order to fix another problem with our Ryzen CPU. The other thread also mentions "idle=nomwait", but I think this is not needed anymore in recent kernel versions.

hasdf

2019-04-19 17:56:29 #7

Member

Registered: 2014-11-18
Posts: 7

Offline

OK. I'll try this and report back if the system crashes again.

Am I correct, that C-states are only important for power-saving? Or does it influence the CPU lifetime as well?

Morn

2019-04-19 18:37:14 #8

Member

Registered: 2012-09-02
Posts: 737

Offline

> **hasdf wrote:**
>
> OK. I'll try this and report back if the system crashes again.
>
> Am I correct, that C-states are only important for power-saving? Or does it influence the CPU lifetime as well?

I think higher power save states might actually *decrease* CPU lifetime if anything. Running the CPU at constant clock speed puts the least strain on the CPU and motherboard AFAIK. Normally machines tend to run best if you do not turn them on and off all the time, CPUs are no different. That is why personally I do not mind max_cstate=1.

thorstenhirsch

2019-04-19 19:15:45 #9

Member

Registered: 2005-08-03
Posts: 87

I see it the other way round: max_cstate=1 means the CPU is constantly operating at full voltage, thus getting hot, which decreases lifetime. Well, it doesn't really operate constantly, because cstate 1 already knows to "halt" the CPU, so it doesn't get as hot as in cstate 0. But I would at least allow the CPU to enter cstate 3. And here's a reddit thread suggesting to disable cstate 6 only. By the way, you can read about the cstates here.

edit: One reddit user says *C6 state is unstable with DRAM "Power Down Enable" option. Disable "Power Down Enable", not C6 state*, but I still had freezes with "DRAM Power Down" disabled.

Last edited by thorstenhirsch (2019-04-19 19:25:26)

Offline

Buddlespit

2019-04-19 21:42:28 #10

Member

From: Chesapeake, Va.
Registered: 2014-02-07
Posts: 500

Offline

Out of curiosity, do you have the amd microcode/firmware loading with the kernel? I ask because I had the same issue with random freezes and removed it from the bootctl entries, which fixed it.

Hw-Probe

thorstenhirsch

2019-04-19 23:06:15 #11

Member

Registered: 2005-08-03
Posts: 87

Offline

After reading the wiki page I would answer your question like this:

- I haven't enabled **early** microcode update, so it wasn't updated when the kernel was loaded
- but I haven't disabled **late** microcode update, so it was updated at a later boot stage by systemd

However I've now also enabled **early** microcode update... and it made no difference. I don't even see any update messages in dmesg.

```
[    0.832583] microcode: CPU0: patch_level
```

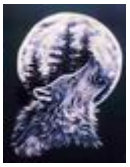
(repeated for each code)
I think this is an updated microcode version, because I've found user reports for the same CPU as mine with microcode version 0x8001126 and others with 0x8001129. So actually I don't know where my update came from, but it seems to be neither Linux's early nor late update function.

edit: Maybe AGESA 1.0.0.6 came with this microcode update and it installs it even before the kernel is loaded...?

Last edited by thorstenhirsch (2019-04-19 23:11:48)

Lone_Wolf 2019-04-20 12:36:27 #12

Member



From: Netherlands, Europe
Registered: 2005-10-04
Posts: 9,072

Offline

> Maybe AGESA 1.0.0.6 came with this microcode update and it installs it even before the kernel is loaded...?

definitely possible as firmware updates often include latest microcode updates.

Disliking systemd intensely, but not satisfied with alternatives so focusing on taming systemd.
Did you use the guided installer ? If yes, I can't help you.

(A works at time B) && (time C > time B) ≠ (A works at time C)

Buddlespit 2019-04-21 11:44:05 #13

Member

From: Chesapeake, Va.
Registered: 2014-02-07
Posts: 500

Offline

> **thorstenhirsch wrote:**
>
> - I haven't enabled **early** microcode update, so it wasn't updated when the kernel was loaded
> - but I haven't disabled **late** microcode update, so it was updated at a later boot stage by systemd

If you didn't install the amd-ucode package from core, then you aren't loading it. Which means I was barking up the wrong tree and I can be safely ignored.

Hw-Probe

kvaps 2019-12-07 00:01:26 #14

Member

Registered: 2015-11-20
Posts: 3

Offline

Hi, I had the same problem on Lenovo ideapad 720S-13ARR (AMD Ryzen 7 2700U)

Adding **processor.max_cstate=1** to kernel cmdline was helpful for me.

2ManyDogs 2019-12-07 00:03:18 #15

Forum Moderator

Registered: 2012-01-15
Posts: 3,580

Thanks for the contribution. Be careful of bumping old topics, especially those marked [SOLVED]. As this topic is more than

six months old and the OP has not been back since May, I am closing this now.

How to post

Offline

Pages: **1** **Topic closed**

Index » Kernel & Hardware
» [Solved] Random freezes with AMD Ryzen on Linux 5.0

Jump to
Kernel & Hardware Go

Atom topic feed

Powered by **FluxBB**