

## Emulator - Emulator Issues #11717

### Frequent JIT cache flushing in some games on AArch64

05/06/2019 06:59 PM - Techjar

<b>Status:</b> Accepted	<b>% Done:</b> 0%
<b>Priority:</b> Normal	
<b>Assignee:</b>	
<b>Category:</b>	
<b>Target version:</b>	
<b>Operating system:</b> N/A	<b>Relates to performance:</b> No
<b>Issue type:</b> Bug	<b>Easy:</b> No
<b>Milestone:</b>	<b>Relates to maintainability:</b> No
<b>Regression:</b> No	<b>Regression start:</b>
<b>Relates to usability:</b> No	<b>Fixed in:</b>
<b>Description</b>	
<b>Game Name?</b>	
All Metroid Prime games Donkey Kong Country Returns True Crime: New York Various other titles I don't remember	
<b>What's the problem? Describe what went wrong.</b>	
I'm making this issue as a way to encompass all the issue reports of game stuttering that are due to this, as well as have it properly documented for prospective devs.	
Some games invalidate icache a lot which causes the JIT cache to fill up very quickly, resulting in frequent flushes which manifest as a very noticeable hitch in gameplay. This is due to our naive block allocator that simply places new blocks at the end of the buffer, and never reuses space from invalidated blocks until the cache is completely cleared. True Crime: New York is a particularly egregious offender, invalidating icache so much that the JIT cache is cleared every 2 seconds, making the game nearly unplayable. Even throwing that out as an outlier, many other titles experience stutters every few minutes that, while not making the game unplayable, are rather annoying and detract from the enjoyment.	
<b>What steps will reproduce the problem?</b>	
Play any of the listed games for some amount of time.	
<b>Is the issue present in the latest development version? For future reference, please also write down the version number of the latest development version.</b>	
Yes, 5.0-10151	
<b>Is the issue present in the latest stable version?</b>	
Presumably yes. The JIT cache has not changed in years, though it's slightly worse in dev builds due to some JIT changes generating more code.	
<b>If the issue isn't present in the latest stable version, which is the first broken version?</b> (You can find the first broken version by bisecting. Windows users can use the tool <a href="https://forums.dolphin-emu.org/Thread-green-notice-development-thread-unofficial-dolphin-bisection-tool-for-finding-broken-builds">https://forums.dolphin-emu.org/Thread-green-notice-development-thread-unofficial-dolphin-bisection-tool-for-finding-broken-builds</a> and anyone who is building Dolphin on their own can use git bisect.)	
N/A, been an issue since the dawn of time.	
<b>What are your PC specifications?</b> (CPU, GPU, Operating System, more)	

4.5GHz CPU Processor  
24-bit Accelerated Video Graphics  
Modern Operating System

**Is there anything else that can help developers narrow down the issue? (e.g. logs, screenshots, configuration files, savefiles, savestates)**

Nope, but I will say that fixing this issue won't be easy. It's most likely going to require some pretty big changes to the whole JIT.

**Related issues:**

Has duplicate Emulator - Emulator Issues #11998: Virtual Console Zelda OOT an...	<b>Duplicate</b>
Has duplicate Emulator - Emulator Issues #11716: Donkey Kong Country Returns ...	<b>Duplicate</b>
Has duplicate Emulator - Emulator Issues #10014: Harry Potter: PoA freeze com...	<b>Duplicate</b>

**History**

**#1 - 05/07/2019 07:37 PM - markwest76**

Do you think this issue could be a duplicate of issue [#11693](#) ?

**#2 - 05/07/2019 07:43 PM - Techjar**

Yeah that's another game that experiences JIT flushing. Though, it would be an duplicate of this one, as this is meant to be the single place to document all the JIT flushing cases.

**#3 - 05/07/2019 07:48 PM - markwest76**

So you can confirm that 5-0-8007 is stutter-free with all the mentioned games?

**#4 - 05/07/2019 07:49 PM - Techjar**

No, as stated older builds just stutter a bit less frequently. Why you experience "no" stuttering on that build we cannot explain, nor reproduce.

**#5 - 11/17/2019 10:57 PM - markwest76**

Another game massively affected by this stuttering plague is Prince of Persia Forgotten Sands...

**#6 - 02/09/2020 11:42 AM - markwest76**

I suggest to check if 5.0-11318 has fixed this issue...

**#7 - 02/09/2020 11:43 AM - Techjar**

It has not, only made the interval between flushes a bit longer depending on the game.

**#8 - 02/09/2020 11:51 AM - flacs**

Try 5.0-11590 (the PDEP issue fix, just in case someone has a Zen CPU) and compare it with 5.0-11537 (last build before double-to-float conversions were de-inlined).

**#9 - 02/09/2020 11:53 AM - Techjar**

That one probably also helps increase the interval further, but we still don't have a proper solution to more or less eliminate the flushing.

**#10 - 09/11/2020 08:04 PM - JosJuice**

- Has duplicate Emulator Issues #11998: Virtual Console Zelda OOT and MM Stutter added

**#11 - 09/11/2020 08:05 PM - JosJuice**

- Has duplicate Emulator Issues #11716: Donkey Kong Country Returns major stutters added

**#12 - 09/11/2020 08:06 PM - JosJuice**

- Has duplicate Emulator Issues #10014: Harry Potter: PoA freeze completely for several seconds added

**#13 - 09/11/2020 09:28 PM - Techjar**

5.0-12575 has significantly improved this issue. There are still problematic outliers, such as True Crime: New York, but for many games this issue is now practically non-existent. I wouldn't called it "fixed" yet, but it's a huge step forward.

<https://dolphin-emu.org/download/dev/a31c204ca8784397928e75624e89e0ae6b733cc9/>

**#14 - 09/12/2020 08:58 AM - JMC4789**

- *Status changed from New to Fixed*

I think we make an issue that details what is left to do down the line.

**#15 - 09/12/2020 09:48 AM - JosJuice**

- *Status changed from Fixed to Accepted*

- *Subject changed from Frequent JIT cache flushing in some games to Frequent JIT cache flushing in some games on AArch64*

5.0-12575 only applies to x64. Let's keep this open until we have the same fix on all platforms.