

AM57xx Linux System Timer

July 10, 2019

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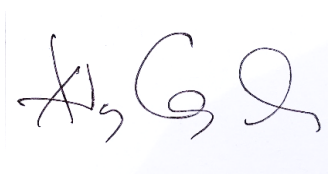
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RE: System Timer issue on AM57x for Nari

Dear Nari team,

This letter will confirm that the problem mentioned in this document is accurately captured and to the best of our knowledge, the workaround described will address the issue.

Thank you for your interest in these TI products.

A handwritten signature in black ink, appearing to read 'AVL', is displayed on a light blue rectangular background.

Adrian Valenzuela
Sitara Business Manager

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Linux Behavior Details

- When Linux system time stops, effectively all scheduling stops except for interrupt driven or command/response
 - Linux thinks time has stopped

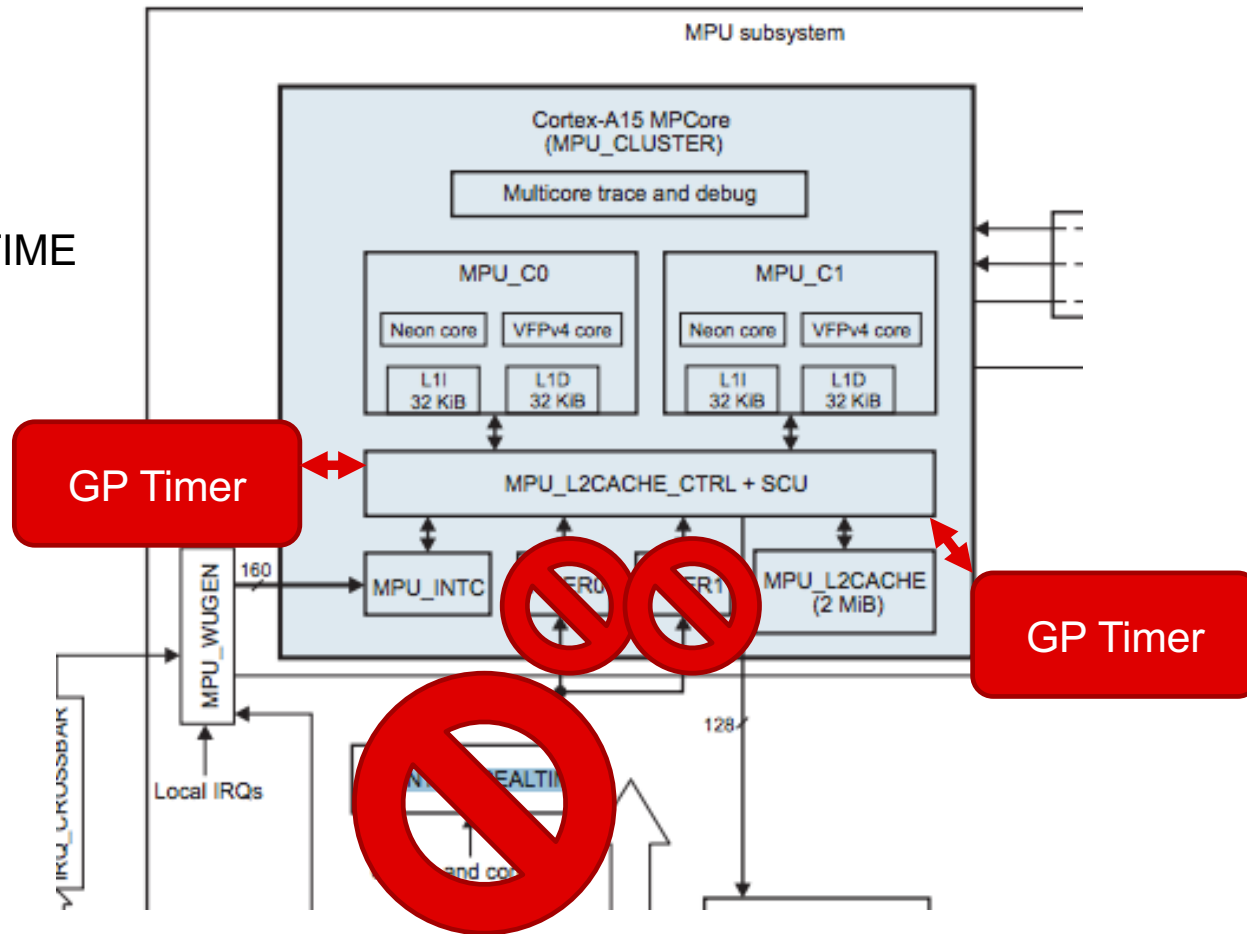
Uptime Change

Arch timers fed by COUNTER_REALTIME are no longer used

GP Timers are used instead, one for each MPU core

Another is used for System Time

This change should meet the system needs for uptime

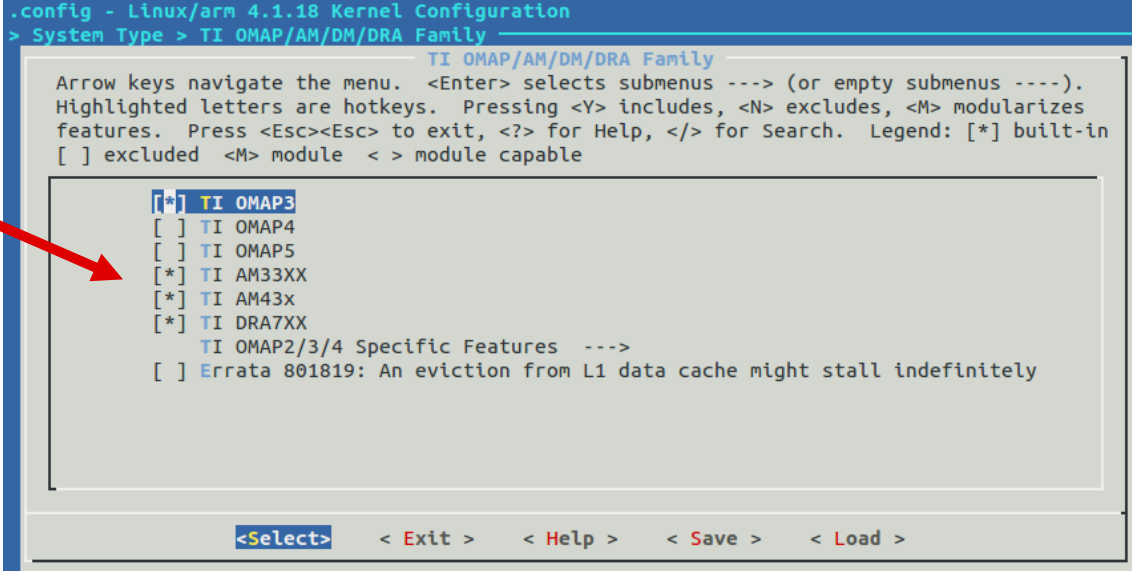


Switching Linux from Arch to GP Timers

- Patchset provided to switch Processor SDK 2.00.02.11 from current Arch timers to use 4 GP Timers
 - 5 patches provided to disable ARCH timer and add support for GP Timers for time keeping
 - Patches may need porting to a specific HW platform
 - Tested on an AM572x GP EVM
- **This changes the uptime behavior as timers are reloaded when they expire**
 - **They do not saturate like COUNTER_REALTIME**
 - **Linux will keep going**

Applying the Change

- Apply all 5 patches in patch set
- Modify .config if these settings are not already present
- Rebuild kernel and dtbs



The screenshot shows the Linux kernel configuration interface for TI OMAP/AM/DM/DRA Family. The menu is titled ".config - Linux/arm 4.1.18 Kernel Configuration" and the current path is "> System Type > TI OMAP/AM/DM/DRA Family". The main menu lists several options: TI OMAP3, TI OMAP4, TI OMAP5, TI AM33XX, TI AM43x, TI DRA7XX, TI OMAP2/3/4 Specific Features --->, and Errata 801819: An eviction from L1 data cache might stall indefinitely. A red arrow points from the text "are not already present" in the list to the "TI OMAP3" option. The bottom of the screen shows navigation options: <Select>, < Exit >, < Help >, < Save >, and < Load >.