

Leo说io中加入mdelay(5),造成kernel boot时crash。

in drivers/pinctrl/pinctrl-single.c

```
1. static void __maybe_unused pcs_writel(unsigned val, void __iomem *reg)
2. {
3.     #ifdef CONFIG_ARCH_PEGMATITE
4.         /* Workaround: Flaw in HW timing requires multiple reads/writes
5.          * to guarantee accuracy */
6.
7.         writel(val, reg);
8.
9.         mdelay(5);
10.    #endif
11.    writel(val, reg);
12. }
```

我试了一下，好像没问题啊?!

```
1. static void __maybe_unused pcs_writel(unsigned val, void __iomem *reg)
2. {
3.     #ifdef CONFIG_ARCH_PEGMATITE
4.         /* Workaround: Flaw in HW timing requires multiple reads/writes
5.          * to guarantee accuracy */
6.         writel(val, reg);
7.         asm (
8.             "mov r0, r0\n"
9.             :
10.            :
11.            : "r0"
12.        );
13.        mdelay(5);
14.        asm (
15.            "mov r0, r0\n"
16.            :
17.            :
18.            : "r0"
19.        );
20.    #endif
21.    writel(val, reg);
22. }
```

在mdelay(5)前后加上nop instruction，是为了辨认出mdelay(5)的assembly code。

```
1.  c021e350 <pcs_writel>:
2.  c021e350:  e92d41f0      push    {r4, r5, r6, r7, r8, lr}
3.  c021e354:  e1a08000      mov     r8, r0
4.  c021e358:  e1a06001      mov     r6, r1
5.  c021e35c:  f57ff04e      dsb     st
6.  c021e360:  e3027444      movw    r7, #9284      ; 0x2444
7.  c021e364:  e34c705e      movt    r7, #49246     ; 0xc05e
8.  c021e368:  e5973014      ldr     r3, [r7, #20]
9.  c021e36c:  e3530000      cmp     r3, #0
10. c021e370:  0a000000      beq     c021e378 <pcs_writel+0x28>
11. c021e374:  e12fff33      blx     r3
12. c021e378:  e5868000      str     r8, [r6]
13. -----
14. c021e37c:  e1a00000      nop          ; (mov r0, r0)
15. c021e380:  e3015d44      movw    r5, #7492      ; 0x1d44
16. c021e384:  e34c505f      movt    r5, #49247     ; 0xc05f
17. c021e388:  e3a04005      mov     r4, #5
18. c021e38c:  e30605b0      movw    r0, #26032     ; 0x65b0
19. c021e390:  e5953004      ldr     r3, [r5, #4]
20. c021e394:  e3400666      movt    r0, #1638      ; 0x666
21. c021e398:  e12fff33      blx     r3
22. c021e39c:  e2544001      subs    r4, r4, #1
23. c021e3a0:  1affffff      bne     c021e38c <pcs_writel+0x3c>
24. c021e3a4:  e1a00000      nop          ; (mov r0, r0)
25. -----
26. c021e3a8:  f57ff04e      dsb     st
27. c021e3ac:  e5973014      ldr     r3, [r7, #20]
28. c021e3b0:  e3530000      cmp     r3, #0
29. c021e3b4:  0a000000      beq     c021e3bc <pcs_writel+0x6c>
30. c021e3b8:  e12fff33      blx     r3
31. c021e3bc:  e5868000      str     r8, [r6]
32. c021e3c0:  e8bd81f0      pop     {r4, r5, r6, r7, r8, pc}
```

中间的code就是mdelay(5)。

kernel booting successfully.

