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Subject: [PATCH] Consolidate show\_regs and show\_registers for i386

Posted by [Pavel Emelianov](#) on Wed, 08 Aug 2007 14:16:39 GMT

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Both functions printk the same information, except for CRx and debug registers in the show\_registers() one and a bit different manner. So move the common code into one place. This is already done for x86\_64, so I think it's worth having the same on i386.

This saves 100 bytes of .rodata section :) ...

but only 8 from .text :(

Signed-off-by: Pavel Emelyanov <xemul@openvz.org>

---

```
arch/i386/kernel/process.c | 56 ++++++++++++++++++++++++++++++++++++++-----
arch/i386/kernel/traps.c   | 32 +++-----
include/asm-i386/system.h  |  1
3 files changed, 45 insertions(+), 44 deletions(-)
```

```
diff --git a/arch/i386/kernel/process.c b/arch/i386/kernel/process.c
```

```
index 238ac1b..ee40c19 100644
```

```
--- a/arch/i386/kernel/process.c
```

```
+++ b/arch/i386/kernel/process.c
```

```
@@ -299,34 +299,52 @@ static int __init idle_setup(char *str)
```

```
}
```

```
early_param("idle", idle_setup);
```

```
-void show_regs(struct pt_regs * regs)
```

```
+void __show_registers(struct pt_regs *regs, int all)
```

```
{
```

```
    unsigned long cr0 = 0L, cr2 = 0L, cr3 = 0L, cr4 = 0L;
```

```
    unsigned long d0, d1, d2, d3, d6, d7;
```

```
+ unsigned long esp;
```

```
+ unsigned short ss, gs;
```

```
+
```

```
+ if (user_mode_vm(regs)) {
```

```
+     esp = regs->esp;
```

```
+     ss = regs->xss & 0xffff;
```

```
+     savesegment(gs, gs);
```

```
+ } else {
```

```
+     esp = (unsigned long) (&regs->esp);
```

```
+     savesegment(ss, ss);
```

```
+     savesegment(gs, gs);
```

```
+ }
```

```
    printk("\n");
```

```

- printk("Pid: %d, comm: %20s\n", current->pid, current->comm);
- printk("EIP: %04x:[<%08lx>] CPU: %d\n", 0xffff & regs->xcs, regs->eip, smp_processor_id());
+ printk("Pid: %d, comm: %.*s %s (%s %.*s)\n",
+ current->pid, TASK_COMM_LEN, current->comm,
+ print_tainted(), init_utsname()->release,
+ (int)strncpy(init_utsname()->version, " "),
+ init_utsname()->version);
+
+ printk("EIP: %04x:[<%08lx>] EFLAGS: %08lx CPU: %d\n",
+ 0xffff & regs->xcs, regs->eip, regs->eflags,
+ smp_processor_id());
print_symbol("EIP is at %s\n", regs->eip);

- if (user_mode_vm(regs))
- printk(" ESP: %04x:%08lx", 0xffff & regs->xss, regs->esp);
- printk(" EFLAGS: %08lx %s (%s %.*s)\n",
- regs->eflags, print_tainted(), init_utsname()->release,
- (int)strncpy(init_utsname()->version, " "),
- init_utsname()->version);
printk("EAX: %08lx EBX: %08lx ECX: %08lx EDX: %08lx\n",
- regs->eax, regs->ebx, regs->ecx, regs->edx);
- printk("ESI: %08lx EDI: %08lx EBP: %08lx",
- regs->esi, regs->edi, regs->ebp);
- printk(" DS: %04x ES: %04x FS: %04x\n",
- 0xffff & regs->xds, 0xffff & regs->xes, 0xffff & regs->xfs);
+ regs->eax, regs->ebx, regs->ecx, regs->edx);
+ printk("ESI: %08lx EDI: %08lx EBP: %08lx ESP: %08lx\n",
+ regs->esi, regs->edi, regs->ebp, esp);
+ printk(" DS: %04x ES: %04x FS: %04x GS: %04x SS: %04x\n",
+ regs->xds & 0xffff, regs->xes & 0xffff,
+ regs->xfs & 0xffff, gs, ss);
+
+ if (!all)
+ return;

cr0 = read_cr0();
cr2 = read_cr2();
cr3 = read_cr3();
cr4 = read_cr4_safe();
- printk("CR0: %08lx CR2: %08lx CR3: %08lx CR4: %08lx\n", cr0, cr2, cr3, cr4);
+ printk("CR0: %08lx CR2: %08lx CR3: %08lx CR4: %08lx\n",
+ cr0, cr2, cr3, cr4);

get_debugreg(d0, 0);
get_debugreg(d1, 1);
@@ -334,10 +352,16 @@ void show_regs(struct pt_regs * regs)
get_debugreg(d3, 3);
printk("DR0: %08lx DR1: %08lx DR2: %08lx DR3: %08lx\n",

```

```

    d0, d1, d2, d3);
+
    get_debugreg(d6, 6);
    get_debugreg(d7, 7);
- printk("DR6: %08lx DR7: %08lx\n", d6, d7);
+ printk("DR6: %08lx DR7: %08lx\n",
+   d6, d7);
+}

```

```

+void show_regs(struct pt_regs * regs)
+{
+   __show_registers(regs, 1);
    show_trace(NULL, regs, &regs->esp);
}

```

```

diff --git a/arch/i386/kernel/traps.c b/arch/i386/kernel/traps.c
index 65eac87..a20c7ad 100644

```

```

--- a/arch/i386/kernel/traps.c

```

```

+++ b/arch/i386/kernel/traps.c

```

```

@@ -282,33 +282,9 @@ EXPORT_SYMBOL(dump_stack);

```

```

void show_registers(struct pt_regs *regs)

```

```

{
    int i;
-   int in_kernel = 1;
-   unsigned long esp;
-   unsigned short ss, gs;
-
-   esp = (unsigned long) (&regs->esp);
-   savesegment(ss, ss);
-   savesegment(gs, gs);
-   if (user_mode_vm(regs)) {
-       in_kernel = 0;
-       esp = regs->esp;
-       ss = regs->xss & 0xffff;
-   }
+
+   print_modules();
-   printk(KERN_EMERG "CPU:   %d\n"
-   KERN_EMERG "EIP:   %04x:[<%08lx>]  %s VLI\n"
-   KERN_EMERG "EFLAGS: %08lx  (%s %.*s)\n",
-   smp_processor_id(), 0xffff & regs->xcs, regs->eip,
-   print_tainted(), regs->eflags, init_utsname()->release,
-   (int)strcspn(init_utsname()->version, " "),
-   init_utsname()->version);
-   print_symbol(KERN_EMERG "EIP is at %s\n", regs->eip);
-   printk(KERN_EMERG "eax: %08lx ebx: %08lx ecx: %08lx edx: %08lx\n",
-   regs->eax, regs->ebx, regs->ecx, regs->edx);
-   printk(KERN_EMERG "esi: %08lx edi: %08lx ebp: %08lx esp: %08lx\n",

```

```

- regs->esi, regs->edi, regs->ebp, esp);
- printk(KERN_EMERG "ds: %04x es: %04x fs: %04x gs: %04x ss: %04x\n",
-   regs->xds & 0xffff, regs->xes & 0xffff, regs->xfs & 0xffff, gs, ss);
+ __show_registers(regs, 0);
  printk(KERN_EMERG "Process %.*s (pid: %d, ti=%p task=%p task.ti=%p)",
    TASK_COMM_LEN, current->comm, current->pid,
    current_thread_info(), current, task_thread_info(current));
@@ -316,14 +292,14 @@ void show_registers(struct pt_regs *regs
 * When in-kernel, we also print out the stack and code at the
 * time of the fault..
 */
- if (in_kernel) {
+ if (!user_mode_vm(regs)) {
    u8 *eip;
    unsigned int code_prologue = code_bytes * 43 / 64;
    unsigned int code_len = code_bytes;
    unsigned char c;

    printk("\n" KERN_EMERG "Stack: ");
- show_stack_log_lvl(NULL, regs, (unsigned long *)esp, KERN_EMERG);
+ show_stack_log_lvl(NULL, regs, &regs->esp, KERN_EMERG);

    printk(KERN_EMERG "Code: ");

diff --git a/include/asm-i386/system.h b/include/asm-i386/system.h
index 609756c..c339b30 100644
--- a/include/asm-i386/system.h
+++ b/include/asm-i386/system.h
@@ -314,5 +314,6 @@ extern unsigned long arch_align_stack(un
extern void free_init_pages(char *what, unsigned long begin, unsigned long end);

void default_idle(void);
+void __show_registers(struct pt_regs *, int all);

#endif

```

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Subject: Re: [PATCH] Consolidate show\_regs and show\_registers for i386  
 Posted by [Sam Ravnborg](#) on Wed, 08 Aug 2007 18:15:30 GMT  
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On Wed, Aug 08, 2007 at 06:16:39PM +0400, Pavel Emelyanov wrote:  
 > Both functions printk the same information, except for CRx and  
 > debug registers in the show\_registers() one and a bit different  
 > manner. So move the common code into one place. This is already  
 > done for x86\_64, so I think it's worth having the same on i386.

Hi Pavel.

As a general note that also applies to your mails...  
Please do not include linux-arch for for issues that does only concern or are only relevant for a single architecture.

Sam

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