

[PATCH-2.4] Disable APIC on reboot.

Source: <http://linux.derkeiler.com/Mailing-Lists/Kernel/2003-08/3014.html>

From: Willy Tarreau (willy_at_w.ods.org)

Date: 08/11/03

Date: Mon, 11 Aug 2003 17:33:53 +0200
To: davej@redhat.com, marcelo@conectiva.com.br

Marcelo,

This patch allows my VAIO to reboot with LOCAL_APIC enabled. I too have a broken BIOS which cannot put hardware into a sane state at boot, and it hangs on IDE detection if the kernel left LOCAL_APIC enabled. Now with this patch upon 2.4.22-rc2, it's OK, so I can enable LOCAL_APIC again. Do you find it too late for 2.4.22 ? Depending on how we see it, it may be considered as a workaround for broken BIOSes, or as a bugfix for a kernel which didn't restore hardware into its original state. Or at least, please accept it for 2.4.23-pre1.

I rediffed it against 2.4.22-rc2, and attached the patch at the end of this mail.

Cheers,
Willy

On Mon, Aug 11, 2003 at 02:40:24PM +0100, davej@redhat.com wrote:

> *Forward port of a patch from Felix [surname mangled by MTA] <fxkuehl@gmx.de>*

>

> *Original mail: -*

>

> *when I reboot my laptop the BIOS complains about a keyboard controller*

> *failure and timer interrupts not working. On the BIOS password screen*

> *the keyboard doesn't work. If I disable the BIOS password the system*

> *hangs a bit later on the POST screen. I tried all reboot methods via the*

> *kernel command line without success. I saw this problem with Debian*

> *Woody's precompiled 2.4.18 kernel, self compiled Debian 2.4.20 sources*

> *and Linux 2.4.21-rc1+ACPI patch. This problem only occurs if*

> *CONFIG_X86_LOCAL_APIC is enabled. With CONFIG_X86_LOCAL_APIC disabled it*
> *reboots just fine.*

>

> *My guess is that it's a BIOS bug as I've never had this problem on other*

> *machines before. I found a workaround: disable the local APIC before*

> *rebooting. I don't really know how it works. Just calling*

> *disable_local_APIC wasn't enough, so I copied a bit more code from*

> *apic_pm_suspend (arch/i386/kernel/apic.c:465) to machine_restart*

> *(arch/i386/kernel/process.c:369). I'm pretty sure that this is not the*

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> *proper way to do it but it works here. A patch against 2.4.21-rc1 can be*
> *found at the end of this email.*
>

```
--- linux-2.4.22-rc2/arch/i386/kernel/process.c Wed Jul 30 09:18:21 2003
+++ linux-2.4.22-rc2-lapic/arch/i386/kernel/process.c Mon Aug 11 17:18:57 2003
@@ -42,6 +42,7 @@
#include <asm/processor.h>
#include <asm/i387.h>
#include <asm/irq.h>
+#include <asm/apic.h>
#include <asm/desc.h>
#include <asm/mmu_context.h>
#ifdef CONFIG_MATH_EMULATION
@@ -400,6 +401,17 @@
    */
    smp_send_stop();
    disable_IO_APIC();
+#elif CONFIG_X86_LOCAL_APIC
+ {
+ unsigned int l, h;
+
+ local_irq_disable();
+ disable_local_APIC();
+ rdmsr(MSR_IA32_APICBASE, l, h);
+ l &= ~MSR_IA32_APICBASE_ENABLE;
+ wrmsr(MSR_IA32_APICBASE, l, h);
+ local_irq_enable();
+ }
#endif

    if(!reboot_thru_bios) {
```

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