

DMA in Kernel 2.6

Source: <http://linux.derkeiler.com/Mailing-Lists/Debian/2004-01/4192.html>

From: Mitchell Ferschweiler (*mitchell_at_instantiations.com*)

Date: 01/23/04

To: debian-user@lists.debian.org

Date: Thu, 22 Jan 2004 21:28:50 -0800

Hi,

I have recently been playing with kernel 2.6, and everything works perfectly except DMA. The dmesg output shows the devices as UDMA(100), but when I copy files or do anything I/O intensive, the CPU usage reported goes to 100%. I have an ABit KD7 motherboard with a Via KT400 chipset. I've tried both custom 2.6.1 kernel and the kernel-image-2.6.0-1-k7 kernel. I haven't had any problems with 2.4.22. (lspci and dmesg output below).

Any suggestions?

If this is the wrong place to ask this question please point me in the right direction.

Thanks,
Mitchell

```
00:00.0 Host bridge: VIA Technologies, Inc. VT8377 [KT400 AGP] Host Bridge
00:01.0 PCI bridge: VIA Technologies, Inc. VT8235 PCI Bridge
00:0a.0 Multimedia audio controller: Creative Labs SB Audigy (rev 03)
00:0a.1 Input device controller: Creative Labs SB Audigy MIDI/Game port (rev 03)
00:0a.2 FireWire (IEEE 1394): Creative Labs SB Audigy FireWire Port
00:0c.0 Unknown mass storage controller: Promise Technology, Inc. 20268 (rev 02)
00:10.0 USB Controller: VIA Technologies, Inc. USB (rev 80)
00:10.1 USB Controller: VIA Technologies, Inc. USB (rev 80)
00:10.2 USB Controller: VIA Technologies, Inc. USB (rev 80)
00:10.3 USB Controller: VIA Technologies, Inc. USB 2.0 (rev 82)
00:11.0 ISA bridge: VIA Technologies, Inc. VT8235 ISA Bridge
00:11.1 IDE interface: VIA Technologies, Inc. VT82C586A/B/VT82C686/A/B/VT8233/A/C/VT8235 PIPC Bus Master IDE (rev 06)
00:11.5 Multimedia audio controller: VIA Technologies, Inc. VT8233/A/8235 AC97 Audio Controller (rev 50)
00:12.0 Ethernet controller: VIA Technologies, Inc. VT6102 [Rhine-II] (rev 74)
```

Debian–User: DMA in Kernel 2.6

01:00.0 VGA compatible controller: ATI Technologies Inc Radeon R200 QL [Radeon 8500 LE]

00:00.0 Host bridge: VIA Technologies, Inc. VT8377 [KT400 AGP] Host Bridge

00:01.0 PCI bridge: VIA Technologies, Inc. VT8235 PCI Bridge

00:0a.0 Multimedia audio controller: Creative Labs SB Audigy (rev 03)

00:0a.1 Input device controller: Creative Labs SB Audigy MIDI/Game port (rev 03)00:0a.2 FireWire (IEEE 1394): Creative Labs SB Audigy FireWire Port

00:0c.0 Unknown mass storage controller: Promise Technology, Inc. 20268 (rev 02)00:10.0 USB Controller: VIA Technologies, Inc. USB (rev 80)

00:10.1 USB Controller: VIA Technologies, Inc. USB (rev 80)

00:10.2 USB Controller: VIA Technologies, Inc. USB (rev 80)

00:10.3 USB Controller: VIA Technologies, Inc. USB 2.0 (rev 82)

00:11.0 ISA bridge: VIA Technologies, Inc. VT8235 ISA Bridge

00:11.1 IDE interface: VIA Technologies, Inc.

VT82C586A/B/VT82C686/A/B/VT8233/A/C/VT8235 PIPC Bus Master IDE (rev 06)

00:11.5 Multimedia audio controller: VIA Technologies, Inc.

VT8233/A/8235 AC97 Audio Controller (rev 50)

00:12.0 Ethernet controller: VIA Technologies, Inc. VT6102 [Rhine–II] (rev 74)

01:00.0 VGA compatible controller: ATI Technologies Inc Radeon R200 QL [Radeon 8500 LE]

I/O APICs

Using ACPI (MADT) for SMP configuration information

Building zonelist for node : 0

Kernel command line: BOOT_IMAGE=Linux2.6.1 ro root=302

video=vesa:ywrap,pmipal,mtrr

Initializing CPU#0

PID hash table entries: 1024 (order 10: 8192 bytes)

Detected 1801.118 MHz processor.

Using tsc for high–res timesource

Console: colour dummy device 80x25

Memory: 254904k/262080k available (2497k kernel code, 6444k reserved, 775k data, 388k init, 0k highmem)

Checking if this processor honours the WP bit even in supervisor mode...

Ok.

Calibrating delay loop... 3547.13 BogoMIPS

Dentry cache hash table entries: 32768 (order: 5, 131072 bytes)

Inode–cache hash table entries: 16384 (order: 4, 65536 bytes)

Mount–cache hash table entries: 512 (order: 0, 4096 bytes)

CPU: After generic identify, caps: 0383fbff c1c3fbff 00000000 00000000

CPU: After vendor identify, caps: 0383fbff c1c3fbff 00000000 00000000

CPU: CLK_CTL MSR was 6003d223. Reprogramming to 2003d223

CPU: L1 I Cache: 64K (64 bytes/line), D cache 64K (64 bytes/line)

CPU: L2 Cache: 256K (64 bytes/line)

CPU: After all inits, caps: 0383fbff c1c3fbff 00000000 00000020

```

Intel machine check architecture supported.
Intel machine check reporting enabled on CPU#0.
CPU: AMD Athlon(tm) XP 2200+ stepping 01
Enabling fast FPU save and restore... done.
Enabling unmasked SIMD FPU exception support... done.
Checking 'hlt' instruction... OK.
POSIX conformance testing by UNIFIX
enabled ExtINT on CPU#0
ESR value before enabling vector: 00000000
ESR value after enabling vector: 00000000
ENABLING IO-APIC IRQs
init IO_APIC IRQs
IO-APIC (apicid-pin) 2-0, 2-16, 2-17, 2-18, 2-19, 2-20, 2-21, 2-22,
2-23 not connected.
..TIMER: vector=0x31 pin1=2 pin2=-1
number of MP IRQ sources: 15.
number of IO-APIC #2 registers: 24.
testing the IO APIC.....
IO APIC #2.....
.... register #00: 02000000
..... : physical APIC id: 02
..... : Delivery Type: 0
..... : LTS : 0
.... register #01: 00178003
..... : max redirection entries: 0017
..... : PRQ implemented: 1
..... : IO APIC version: 0003
.... IRQ redirection table:
NR Log Phy Mask Trig IRR Pol Stat Dest Deli Vect:
00 000 00 1 0 0 0 0 0 0 00
01 001 01 0 0 0 0 0 1 1 39
02 001 01 0 0 0 0 0 1 1 31
03 001 01 0 0 0 0 0 1 1 41
04 001 01 0 0 0 0 0 1 1 49
05 001 01 0 0 0 0 0 1 1 51
06 001 01 0 0 0 0 0 1 1 59
07 001 01 0 0 0 0 0 1 1 61
08 001 01 0 0 0 0 0 1 1 69
09 001 01 0 0 0 0 0 1 1 71
0a 001 01 0 0 0 0 0 1 1 79
0b 001 01 0 0 0 0 0 1 1 81
0c 001 01 0 0 0 0 0 1 1 89
0d 001 01 0 0 0 0 0 1 1 91
0e 001 01 0 0 0 0 0 1 1 99
0f 001 01 0 0 0 0 0 1 1 A1
10 000 00 1 0 0 0 0 0 0 00
11 000 00 1 0 0 0 0 0 0 00
12 000 00 1 0 0 0 0 0 0 00
13 000 00 1 0 0 0 0 0 0 00
14 000 00 1 0 0 0 0 0 0 00
15 000 00 1 0 0 0 0 0 0 00

```

16 000 00 1 0 0 0 0 0 0 0
17 000 00 1 0 0 0 0 0 0 0

IRQ to pin mappings:

IRQ0 -> 0:2
IRQ1 -> 0:1
IRQ3 -> 0:3
IRQ4 -> 0:4
IRQ5 -> 0:5
IRQ6 -> 0:6
IRQ7 -> 0:7
IRQ8 -> 0:8
IRQ9 -> 0:9
IRQ10 -> 0:10
IRQ11 -> 0:11
IRQ12 -> 0:12
IRQ13 -> 0:13
IRQ14 -> 0:14
IRQ15 -> 0:15

..... done.

Using local APIC timer interrupts.

calibrating APIC timer ...

..... CPU clock speed is 1800.0484 MHz.

..... host bus clock speed is 266.0738 MHz.

NET: Registered protocol family 16

PCI: PCI BIOS revision 2.10 entry at 0xfb4e0, last bus=1

PCI: Using configuration type 1

mtrr: v2.0 (20020519)

ACPI: Subsystem revision 20031002

IOAPIC[0]: Set PCI routing entry (2-9 -> 0x71 -> IRQ 9 Mode:0 Active:0)

ACPI: Interpreter enabled

ACPI: Using IOAPIC for interrupt routing

ACPI: PCI Root Bridge [PCI0] (00:00)

PCI: Probing PCI hardware (bus 00)

ACPI: PCI Interrupt Routing Table [_SB_.PCI0._PRT]

ACPI: PCI Interrupt Link [LNKA] (IRQs 1 3 4 5 6 7 10 *11 12 14 15)

ACPI: PCI Interrupt Link [LNKB] (IRQs 1 3 4 *5 6 7 10 11 12 14 15)

ACPI: PCI Interrupt Link [LNKC] (IRQs 1 3 4 5 6 7 *10 11 12 14 15)

ACPI: PCI Interrupt Link [LNKD] (IRQs 1 3 4 5 6 7 10 *11 12 14 15)

ACPI: PCI Interrupt Link [ALKA] (IRQs 20)

ACPI: PCI Interrupt Link [ALKB] (IRQs 21)

ACPI: PCI Interrupt Link [ALKC] (IRQs 22)

ACPI: PCI Interrupt Link [ALKD] (IRQs 23)

Linux Plug and Play Support v0.97 (c) Adam Belay

PnPBIOS: Scanning system for PnP BIOS support...

PnPBIOS: Found PnP BIOS installation structure at 0xc00fbfb0

PnPBIOS: PnP BIOS version 1.0, entry 0xf0000:0xbfe0, dseg 0xf0000

pnp: 00:0b: ioport range 0x3f0-0x3f1 has been reserved

PnPBIOS: 16 nodes reported by PnP BIOS; 16 recorded by driver

SCSI subsystem initialized

drivers/usb/core/usb.c: registered new driver usbfs

drivers/usb/core/usb.c: registered new driver hub

Debian–User: DMA in Kernel 2.6

```
IOAPIC[0]: Set PCI routing entry (2-16 -> 0xa9 -> IRQ 16 Mode:1
Active:1)
00:00:08[A] -> 2-16 -> IRQ 16
IOAPIC[0]: Set PCI routing entry (2-17 -> 0xb1 -> IRQ 17 Mode:1
Active:1)
00:00:08[B] -> 2-17 -> IRQ 17
IOAPIC[0]: Set PCI routing entry (2-18 -> 0xb9 -> IRQ 18 Mode:1
Active:1)
00:00:08[C] -> 2-18 -> IRQ 18
IOAPIC[0]: Set PCI routing entry (2-19 -> 0xc1 -> IRQ 19 Mode:1
Active:1)
00:00:08[D] -> 2-19 -> IRQ 19
Pin 2-17 already programmed
Pin 2-19 already programmed
Pin 2-18 already programmed
Pin 2-16 already programmed
Pin 2-17 already programmed
Pin 2-16 already programmed
Pin 2-19 already programmed
Pin 2-18 already programmed
Pin 2-19 already programmed
Pin 2-16 already programmed
Pin 2-17 already programmed
Pin 2-18 already programmed
Pin 2-18 already programmed
Pin 2-19 already programmed
Pin 2-16 already programmed
Pin 2-17 already programmed
Pin 2-19 already programmed
Pin 2-17 already programmed
Pin 2-18 already programmed
Pin 2-16 already programmed
Pin 2-18 already programmed
Pin 2-19 already programmed
Pin 2-16 already programmed
Pin 2-17 already programmed
_CRS returns NULL! Using IRQ 21 for device (PCI Interrupt Link [ALKB]).
ACPI: PCI Interrupt Link [ALKB] enabled at IRQ 21
IOAPIC[0]: Set PCI routing entry (2-21 -> 0xc9 -> IRQ 21 Mode:1
Active:1)
00:00:10[A] -> 2-21 -> IRQ 21
Pin 2-21 already programmed
Pin 2-21 already programmed
Pin 2-21 already programmed
_CRS returns NULL! Using IRQ 20 for device (PCI Interrupt Link [ALKA]).
ACPI: PCI Interrupt Link [ALKA] enabled at IRQ 20
IOAPIC[0]: Set PCI routing entry (2-20 -> 0xd1 -> IRQ 20 Mode:1
Active:1)
00:00:11[A] -> 2-20 -> IRQ 20
Pin 2-21 already programmed
_CRS returns NULL! Using IRQ 22 for device (PCI Interrupt Link [ALKC]).
```

Debian–User: DMA in Kernel 2.6

```
ACPI: PCI Interrupt Link [ALKC] enabled at IRQ 22
IOAPIC[0]: Set PCI routing entry (2-22 -> 0xd9 -> IRQ 22 Mode:1
Active:1)
00:00:11[C] -> 2-22 -> IRQ 22
_CRS returns NULL! Using IRQ 23 for device (PCI Interrupt Link [ALKD]).
ACPI: PCI Interrupt Link [ALKD] enabled at IRQ 23
IOAPIC[0]: Set PCI routing entry (2-23 -> 0xe1 -> IRQ 23 Mode:1
Active:1)
00:00:11[D] -> 2-23 -> IRQ 23
Pin 2-16 already programmed
Pin 2-17 already programmed
Pin 2-18 already programmed
Pin 2-19 already programmed
Pin 2-23 already programmed
Pin 2-23 already programmed
Pin 2-23 already programmed
Pin 2-23 already programmed
PCI: Using ACPI for IRQ routing
PCI: if you experience problems, try using option 'pci=noacpi' or even
'acpi=off'
vesafb: framebuffer at 0xd0000000, mapped to 0xd080b000, size 16384k
vesafb: mode is 1024x768x16, linelength=2048, pages=84
vesafb: protected mode interface info at c000:5296
vesafb: scrolling: redraw
vesafb: directcolor: size=0:5:6:5, shift=0:11:5:0
fb0: VESA VGA frame buffer device
Machine check exception polling timer started.
Installing knfsd (copyright (C) 1996 okir@monad.swb.de).
NTFS driver 2.1.5 [Flags: R/W].
udf: registering filesystem
PCI: Via IRQ fixup for 0000:00:10.0, from 11 to 5
PCI: Via IRQ fixup for 0000:00:10.2, from 10 to 5
ACPI: Power Button (FF) [PWRF]
ACPI: Sleep Button (CM) [SLPB]
ACPI: Fan [FAN] (on)
ACPI: Processor [CPU0] (supports C1 C2, 2 throttling states)
ACPI: Thermal Zone [THRM] (36 C)
isapnp: Scanning for PnP cards...
isapnp: No Plug & Play device found
Console: switching to colour frame buffer device 128x48
pty: 256 Unix98 ptys configured
request_module: failed /sbin/modprobe -- parport_lowlevel. error = -16
lp: driver loaded but no devices found
Serial: 8250/16550 driver $Revision: 1.90 $ 8 ports, IRQ sharing
disabled
ttyS0 at I/O 0x3f8 (irq = 4) is a 16550A
ttyS1 at I/O 0x2f8 (irq = 3) is a 16550A
parport0: PC-style at 0x378 (0x778) [PCSPPP(,...)]
parport0: irq 7 detected
lp0: using parport0 (polling).
Using anticipatory io scheduler
```

Debian–User: DMA in Kernel 2.6

Floppy drive(s): fd0 is 1.44M
FDC 0 is a post–1991 82077
via–rhine.c:v1.10–LK1.1.19–2.5 July–12–2003 Written by Donald Becker
<http://www.scyld.com/network/via–rhine.html>
eth0: VIA VT6102 Rhine–II at 0xe000, 00:50:8d:47:1f:fc, IRQ 23.
eth0: MII PHY found at address 1, status 0x786d advertising 05e1 Link
45e1.
Uniform Multi–Platform E–IDE driver Revision: 7.00alpha2
ide: Assuming 33MHz system bus speed for PIO modes; override with
idebus=xx
PDC20268: IDE controller at PCI slot 0000:00:0c.0
PDC20268: chipset revision 2
PDC20268: 100% native mode on irq 18
 ide2: BM–DMA at 0xc800–0xc807, BIOS settings: hde:pio, hdf:pio
 ide3: BM–DMA at 0xc808–0xc80f, BIOS settings: hdg:pio, hdh:pio
hde: WDC WD2000JB–34EVA0, ATA DISK drive
ide2 at 0xb800–0xb807,0xbc02 on irq 18
VP_IDE: IDE controller at PCI slot 0000:00:11.1
VP_IDE: chipset revision 6
VP_IDE: not 100% native mode: will probe irqs later
ide: Assuming 33MHz system bus speed for PIO modes; override with
idebus=xx
VP_IDE: VIA vt8235 (rev 00) IDE UDMA133 controller on pci0000:00:11.1
 ide0: BM–DMA at 0xd800–0xd807, BIOS settings: hda:DMA, hdb:DMA
 ide1: BM–DMA at 0xd808–0xd80f, BIOS settings: hdc:DMA, hdd:DMA
hda: WDC WD400EB–00CPF0, ATA DISK drive
hdb: WDC WD800JB–00CRA1, ATA DISK drive
ide0 at 0x1f0–0x1f7,0x3f6 on irq 14
hdc: JLMS XJ–HD166S, ATAPI CD/DVD–ROM drive
hdd: TDK CDRW4800B, ATAPI CD/DVD–ROM drive
ide1 at 0x170–0x177,0x376 on irq 15
hde: max request size: 1024KiB
hde: 390721968 sectors (200049 MB) w/8192KiB Cache, CHS=24321/255/63,
UDMA(100)
 hde: hde1
hda: max request size: 128KiB
hda: 78165360 sectors (40020 MB) w/2048KiB Cache, CHS=65535/16/63,
UDMA(100)
 hda: hda1 hda2 hda3
hdb: max request size: 128KiB
hdb: 156301488 sectors (80026 MB) w/8192KiB Cache, CHS=65535/16/63,
UDMA(100)
 hdb: hdb1
hdc: ATAPI 48X DVD–ROM drive, 512kB Cache, UDMA(33)
Uniform CD–ROM driver Revision: 3.12
hdd: ATAPI 48X CD–ROM CD–R/RW drive, 2048kB Cache, UDMA(33)
ohci1394: \$Rev: 1087 \$ Ben Collins <bcollins@debian.org>
ohci1394: fw–host0: OHCI–1394 1.1 (PCI): IRQ=[16]
MMIO=[e4118000–e41187ff] Max Packet=[2048]
Console: switching to colour frame buffer device 128x48
ehci_hcd 0000:00:10.3: EHCI Host Controller

Debian–User: DMA in Kernel 2.6

```
ehci_hcd 0000:00:10.3: irq 21, pci mem d180c000
ehci_hcd 0000:00:10.3: new USB bus registered, assigned bus number 1
ehci_hcd 0000:00:10.3: USB 2.0 enabled, EHCI 1.00, driver 2003–Jun–13
hub 1–0:1.0: USB hub found
hub 1–0:1.0: 6 ports detected
drivers/usb/host/uhci–hcd.c: USB Universal Host Controller Interface
driver v2.1uhci_hcd 0000:00:10.0: UHCI Host Controller
uhci_hcd 0000:00:10.0: irq 21, io base 0000cc00
uhci_hcd 0000:00:10.0: new USB bus registered, assigned bus number 2
hub 2–0:1.0: USB hub found
hub 2–0:1.0: 2 ports detected
uhci_hcd 0000:00:10.1: UHCI Host Controller
uhci_hcd 0000:00:10.1: irq 21, io base 0000d000
uhci_hcd 0000:00:10.1: new USB bus registered, assigned bus number 3
ieee1394: Host added: ID:BUS[0–00:1023] GUID[00023c0020000e26]
hub 3–0:1.0: USB hub found
hub 3–0:1.0: 2 ports detected
uhci_hcd 0000:00:10.2: UHCI Host Controller
uhci_hcd 0000:00:10.2: irq 21, io base 0000d400
uhci_hcd 0000:00:10.2: new USB bus registered, assigned bus number 4
hub 4–0:1.0: USB hub found
hub 4–0:1.0: 2 ports detected
drivers/usb/core/usb.c: registered new driver usblp
drivers/usb/class/usblp.c: v0.13: USB Printer Device Class driver
Initializing USB Mass Storage driver...
drivers/usb/core/usb.c: registered new driver usb–storage
USB Mass Storage support registered.
drivers/usb/core/usb.c: registered new driver hid
drivers/usb/input/hid–core.c: v2.0:USB HID core driver
mouse: PS/2 mouse device common for all mice
serio: i8042 AUX port at 0x60,0x64 irq 12
input: ImPS/2 Generic Wheel Mouse on isa0060/serio1
serio: i8042 KBD port at 0x60,0x64 irq 1
input: AT Translated Set 2 keyboard on isa0060/serio0
Advanced Linux Sound Architecture Driver Version 0.9.7 (Thu Sep 25
19:16:36 2003 UTC).
request_module: failed /sbin/modprobe -- snd–card–0. error = –16
ALSA device list:
 #0: Sound Blaster Audigy (rev.3) at 0xb000, irq 17
NET: Registered protocol family 2
IP: routing cache hash table of 2048 buckets, 16Kbytes
TCP: Hash tables configured (established 16384 bind 32768)
NET: Registered protocol family 1
NET: Registered protocol family 17
kjournald starting. Commit interval 5 seconds
EXT3–fs: mounted filesystem with ordered data mode.
VFS: Mounted root (ext3 filesystem) readonly.
Freeing unused kernel memory: 388k freed
Adding 385552k swap on /dev/hda3. Priority:–1 extents:1
EXT3 FS on hda2, internal journal
request_module: failed /sbin/modprobe -- char–major–10–135. error = 256
```

Debian-User: DMA in Kernel 2.6

```
request_module: failed /sbin/modprobe -- char-major-10-135. error = 256
Linux agpgart interface v0.100 (c) Dave Jones
agpgart: Detected VIA KT400/KT400A/KT600 chipset
agpgart: Maximum main memory to use for agp memory: 203M
agpgart: AGP aperture is 64M @ 0xe0000000
[drm] Initialized radeon 1.9.0 20020828 on minor 0
kjournald starting. Commit interval 5 seconds
EXT3-fs warning: maximal mount count reached, running e2fsck is
recommended
EXT3 FS on hdb1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
kjournald starting. Commit interval 5 seconds
EXT3-fs warning: maximal mount count reached, running e2fsck is
recommended
EXT3 FS on hde1, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
NTFS volume version 3.0.
eth0: Setting full-duplex based on MII #1 link partner capability of
45e1.
request_module: failed /sbin/modprobe -- char-major-10-135. error = 256
request_module: failed /sbin/modprobe -- net-pf-10. error = 256
request_module: failed /sbin/modprobe -- char-major-10-134. error = 256
mtrr: 0xd0000000,0x8000000 overlaps existing 0xd0000000,0x1000000
mtrr: 0xd0000000,0x8000000 overlaps existing 0xd0000000,0x1000000
agpgart: Found an AGP 2.0 compliant device at 0000:00:00.0.
agpgart: Putting AGP V2 device at 0000:00:00.0 into 4x mode
agpgart: Putting AGP V2 device at 0000:01:00.0 into 4x mode
[drm] Loading R200 Microcode
```

--

To UNSUBSCRIBE, email to debian-user-request@lists.debian.org
with a subject of "unsubscribe". Trouble? Contact listmaster@lists.debian.org