Subject: dpt_i2o: cycle with interrupts disabled
Posted by vaverin on Tue, 03 Oct 2006 09:29:10 GMT
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Mark,

I would like to tell you that we have included your driver into our kernels.
Unfortunately it does not work well and our customers who tried to use it
instead of i2o_block driver claims on the node lockups.
We have received error messages, it shows that NMI watchdog detected that your
driver loops in the following cycle up to 30 sec with interrupts disabled:

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scsi_dispatch_cmd()    (spin_lock_irqsave(host->host_lock, flags);)
 host->hostt->queuecommand() == adpt_queue()
   adpt_scsi_to_i2o()
     adpt_i2o_post_this():
...
        ulong timeout = jiffies + 30*HZ;
        do {
                rmb();
                m = readl(pHba->post_port);
                if (m != EMPTY_QUEUE) {
                        break;
                }
                if(time_after(jiffies,timeout)){
                        printk(KERN_WARNING"dpti%d: Timeout waiting for message
frame!\n", pHba->unit);
                        return -ETIMEDOUT;
                }
        } while(m == EMPTY_QUEUE);
...
```

Have you probably some ideas how to fix this issue in a proper way?

Thank you,
 Vasily Averin

SWsoft Virtuozzo/OpenVZ Linux kernel team

Subject: RE: dpt_i2o: cycle with interrupts disabled
Posted by mark_salyzyn on Tue, 03 Oct 2006 17:17:50 GMT
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This is a sign of a serious hardware problem. The timeout of this loop
was set to 30 seconds when the NMI watchdog used to be set to 60
seconds. Now that it is 30 seconds, I recommend you drop the loop
timeout to 20 seconds so that it times out before the system notices.

The serious hardware problem will then turn from a panic into a slightly more graceful failure to talk to the adapter as it is no longer responsive and the devices will all go offline. I suggest you look into why the Adapter is failing on your system; look into Power Supply, PCI bridge, Motherboard or the Card itself. I have no body of experience as to why you may see this failure, but you may wish to contact Adaptec Technical support as they may have some sage advice.

Sincerely -- Mark Salyzyn

> -----Original Message-----
> From: Vasily Averin [mailto:vvs@sw.ru]
> Sent: Tuesday, October 03, 2006 5:29 AM
> To: Salyzyn, Mark
> Cc: devel@openvz.org
> Subject: dpt_i2o: cycle with interrupts disabled
>
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> SWsoft Virtuozzo/OpenVZ Linux kernel team
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Subject: Re: dpt_i2o: cycle with interrupts disabled
Posted by vaverin on Wed, 04 Oct 2006 09:16:14 GMT
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Hello Mark,

Of course I cannot exclude some hardware issues. However I would note that your
driver is incorrect.
First of all I would note that NMI watchdog have 5 second timeout and it detects
busy loop in your driver correctly. Ok, we can make timeout in your driver
lesser that 5 seconds, but it seems for me it is a bad idea to have such loops
at all. If you have found that hardware is not ready, you can return error to
scsi midlayer. If you want to wait sometime, you can free the locks, enable
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thank you,
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Salyzyn, Mark wrote:
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Subject: RE: dpt_i2o: cycle with interrupts disabled
Posted by mark_salyzyn on Wed, 04 Oct 2006 13:27:22 GMT
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Spins like this exist in all drivers that talk directly to responsive hardware, to sleep is not an appropriate option and affects normal runtime performance for real-time hardware, still need a high priority spin for at least part of the failure. Reducing the CPU utilization may be admirable, but would still require a real-time loop that stages to a sleep, an over complication for a rare and fatal condition.

The condition is fatal, this is a Hardware FIFO that responds in less than a PCI cycle and provides an atomic value. Delays in values usually are a result of a hardware bug in the original i960 messaging hardware in early hardware where a multiple read was required to pick up the value from the FIFO, spin was added to deal with this early hardware. Original code spins without timeout, usually at interrupt context, spinning with a timeout is but to add some grace for what should be an impossible condition. Failure requires Firmware to go 'nutz', hardware failures on the card, overheating or power supply levels to PCI slot being inappropriate.

Since the Linux community takes no more patches for this driver except for a bona-fide bug, ie a failure that can be averted, I do not expect any code space mitigation for this issue to be accepted.

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> Sent: Wednesday, October 04, 2006 5:16 AM
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