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Subject: Re: Kernel text size with pid namespace  
Posted by [Matt Mackall](#) on Thu, 20 Sep 2007 03:39:45 GMT  
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On Wed, Sep 19, 2007 at 05:16:44PM -0700, sukadev@us.ibm.com wrote:

> Matt,

>

> The pid-namespace patchset (<http://lkml.org/lkml/2007/8/10/118>)

> was added to the -mm tree in 2.6.23-rc3-mm1.

>

> With CONFIG\_CC\_OPTIMIZE\_FOR\_SIZE=y this patchset increases the kernel

> text size by about 5K (closer to 6K when the config token is set to N).

That's not too bad.

> As a quick test, I unlined several helper functions and with this

> the text size increased by about 4K. But since most of these inline

> functions are used in process creation/termination, we would need to

> keep them inline, when optimizing for performance.

You are aware that functions as critical as spinlocks are now completely out of line, right? Given that a cache miss is significantly more expensive than a function call, fitting more in cache by reducing inlining tends to be a substantial win.

Inline functions still tend to make performance sense when the actual function body is more complex than setting up the call frame, of course, but in those cases, uninlining will tend to increase code size.

But I'd be very surprised if uninlining things showed up negatively even on a microbenchmark like Imbench.

Also, quick question (I haven't really looked at this code in any detail):

```
static inline pid_t pid_nr(struct pid *pid)
{
    pid_t nr = 0;
    if (pid)
        nr = pid->nr;
    +    nr = pid->numbers[0].nr;
    +    return nr;
    +}
```

Is calling this with a null struct pid a sensible thing to do or is it a bug? If the latter, it'd be preferable to just do:

```
return pid->numbers[0].nr;
```

And if the former, could we arrange to avoid using null struct pids at all? Perhaps by having a dummy zeropid?

```
> Is there a cause for concern with the 5K to 6K increase in text size ?
> If so, can/should we conditionally inline some functions ? Or move
> some pid namespace creation code under CONFIG_TINY or something ?
> Are there other techniques besides uninline we could apply ?
>
> For reference, I am including below, some numbers for 2.6.23-rc2-mm2
> kernel for an x86_64 config file. In the following filenames:
>
> "clean" no pid ns patches
> "opt-size" CONFIG_CC_OPTIMIZE_FOR_SIZE=y
> "no-opt" CONFIG_CC_OPTIMIZE_FOR_SIZE=n
> "uninline" uninline several new inline functions.
>
> $ size vmlinux*
>
> text    data    bss     dec     hex filename
>
> 6016101 906266 772424 7694791 7569c7 vmlinux-clean-no-opt-size
> 6021869 906330 772424 7700623 75808f vmlinux-pidns-no-opt-size
> 6020805 906330 772424 7699559 757c67 vmlinux-pidns-no-opt-uninline-task-pid
>
> 5299192 906330 772424 6977946 6a799a vmlinux-clean-opt-size
> 5304588 906394 772424 6983406 6a8eee vmlinux-pidns-opt-size
> 5303348 906394 772424 6982166 6a8a16 vmlinux-pidns-opt-size-uninline-task-pid
```

You might try running scripts/bloat-o-meter against a pair of these.

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Mathematics is the supreme nostalgia of our time.

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