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Subject: Re: [PATCH 4/5] blk-throttle: track buffered and anonymous pages

Posted by [Andrea Righi](#) on Tue, 22 Feb 2011 23:05:34 GMT

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On Tue, Feb 22, 2011 at 04:00:30PM -0500, Vivek Goyal wrote:

> On Tue, Feb 22, 2011 at 06:12:55PM +0100, Andrea Righi wrote:

> > Add the tracking of buffered (writeback) and anonymous pages.

> >

> > Dirty pages in the page cache can be processed asynchronously by the

> > per-bdi flusher kernel threads or by any other thread in the system,

> > according to the writeback policy.

> >

> > For this reason the real writes to the underlying block devices may

> > occur in a different IO context respect to the task that originally

> > generated the dirty pages involved in the IO operation. This makes

> > the tracking and throttling of writeback IO more complicate respect to

> > the synchronous IO from the blkio controller's point of view.

> >

> > The idea is to save the cgroup owner of each anonymous page and dirty

> > page in page cache. A page is associated to a cgroup the first time it

> > is dirtied in memory (for file cache pages) or when it is set as

> > swap-backed (for anonymous pages). This information is stored using the

> > page\_cgroup functionality.

> >

> > Then, at the block layer, it is possible to retrieve the throttle group

> > looking at the bio\_page(bio). If the page was not explicitly associated

> > to any cgroup the IO operation is charged to the current task/cgroup, as

> > it was done by the previous implementation.

> >

> > Signed-off-by: Andrea Righi <[arighi@develer.com](mailto:arighi@develer.com)>

> > ---

> > block/blk-throttle.c | 87 ++++++

> > include/linux/blkdev.h | 26 ++++++

> > 2 files changed, 111 insertions(+), 2 deletions(-)

> >

> > diff --git a/block/blk-throttle.c b/block/blk-throttle.c

> > index 9ad3d1e..a50ee04 100644

> > --- a/block/blk-throttle.c

> > +++ b/block/blk-throttle.c

> > @@ -8,6 +8,10 @@

> > #include <linux/slab.h>

> > #include <linux/blkdev.h>

> > #include <linux/bio.h>

> > +#include <linux/memcontrol.h>

> > +#include <linux/mm\_inline.h>

> > +#include <linux/pagemap.h>

> > +#include <linux/page\_cgroup.h>

> > #include <linux/blktrace\_api.h>

```

> > #include <linux/blk-cgroup.h>
> >
> > @@ -221,6 +225,85 @@ done:
> > return tg;
> > }
> >
> > +static inline bool is_kernel_io(void)
> > +{
> > + return !!(current->flags & (PF_KTHREAD | PF_KSWAPD | PF_MEMALLOC));
> > +}
> > +
> > +static int throtl_set_page_owner(struct page *page, struct mm_struct *mm)
> > +{
> > + struct blkio_cgroup *blkcg;
> > + unsigned short id = 0;
> > +
> > + if (blkio_cgroup_disabled())
> > + return 0;
> > + if (!mm)
> > + goto out;
> > + rcu_read_lock();
> > + blkcg = task_to_blkio_cgroup(rcu_dereference(mm->owner));
> > + if (likely(blkcg))
> > + id = css_id(&blkcg->css);
> > + rcu_read_unlock();
> > +out:
> > + return page_cgroup_set_owner(page, id);
> > +}
> > +
> > +int blk_throtl_set_anonpage_owner(struct page *page, struct mm_struct *mm)
> > +{
> > + return throtl_set_page_owner(page, mm);
> > +}
> > +EXPORT_SYMBOL(blk_throtl_set_anonpage_owner);
> > +
> > +int blk_throtl_set_filepage_owner(struct page *page, struct mm_struct *mm)
> > +{
> > + if (is_kernel_io() || !page_is_file_cache(page))
> > + return 0;
> > + return throtl_set_page_owner(page, mm);
> > +}
> > +EXPORT_SYMBOL(blk_throtl_set_filepage_owner);
>
> Why are we exporting all these symbols?

```

Right. Probably a single one is enough:

```
int blk_throtl_set_page_owner(struct page *page,
```

```
struct mm_struct *mm, bool anon);
```

-Andrea

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Containers mailing list

Containers@lists.linux-foundation.org

<https://lists.linux-foundation.org/mailman/listinfo/containers>

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